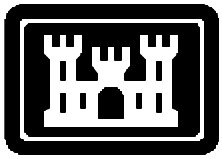

US Army Corps
of Engineers
Baltimore District

CONSTRUCTION SPECIFICATIONS

MAINTENANCE DREDGING

HONGA RIVER AND TAR BAY, BACK CREEK AND TYLER COVE, DORCHESTER COUNTY, MARYLAND

INVITIATION NO. **DACW31-03-B-0009**

CONTRACT NO.

DATE: **JUN 10, 2003**

INDEX OF SPECIAL CLAUSES AND TECHNICAL PROVISIONS

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SECTION 1 - SPECIAL CLAUSES

1. COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK: The Contractor shall be required to commence work under this contract within 10 calendar days after the date of receipt by him/her of Notice to Proceed, to prosecute said work diligently and to complete the entire work ready for use not later than 180 calendar days after the date of receipt by him of notice to proceed. All dredging shall be completed within 180 days of Notice to Proceed. Due to environmental concerns dredging is currently permitted between August 1 and February 15. If an extension of time is granted to complete the remaining work during the next succeeding environmentally acceptable dredging period of August 1 and February 15, additional mobilization and demobilization as a result of time extensions granted under this contract shall be the responsibility of the Contractor. Liquidated damages will not be charged during the environmental constraint period of February 16 through July 31. Should the total quantity of material to be paid for and actually removed under the contract exceed the limit established in the Special Contract Requirement VARIATIONS IN ESTIMATED QUANTITY, additional time will be allowed at the rate of one calendar day for each 2,000 cubic yards in excess of the established limit. The time stated for completion shall include final clean-up of the premises.

2. ESTIMATED QUANTITIES: The total estimated quantities of material necessary to be removed from within the specified limits, as shown on the contract drawings exclusive of allowable overdepth, to complete the work is 146,212 cubic yards place measurement. The maximum amount of allowable overdepth dredging is estimated to be 150,472 cubic yards place measurement. Quantities for the various reaches are tabulated as follows:

Channel	Stations	Required Dredging Quantity	Allowable Overdepth Dredging Quantity	Total Quantity
Honga River - Back Creek	-0+800 to 5+560	27,953	40,704	68,657
Honga River – East Channel	-0+100 to 9+900	55,918	47,668	103,586
Tyler Cove	0+200 to 0+700	2,512	2,537	5,049
Honga River – Tar Bay (Maintenance)	13+800 to 16+400	1,475	14,477	15,952
Honga River – Tar Bay (New Work)	16+400 to 23+800	58,354	45,086	103,440
Totals		146,212	150,472	296,684

3. PHYSICAL DATA: Information and data furnished or referred to below are furnished for information only and it is expressly understood that the

Government will not be responsible for any interpretation or conclusion drawn therefore by the Contractor.

3.1 Physical Conditions: The physical conditions indicated on the contract drawings and in the specifications are the result of site investigations by surveys and probing. A copy of the sieve analyses performed on the sediment samples taken from the Federal channels in Honga River & Tar Bay, Back Creek and Tyler Cove are located at the end of the specifications, along with a map showing the approximate sample locations. Records of previous dredging of the existing Federal channel indicate that the material to be removed by maintenance dredging consists principally of silt, gravel, shell, sand, clay and combinations thereof.

3.2 Weather Conditions: Complete weather records and reports may be obtained from the U.S. Weather Bureau. The Contractor shall satisfy himself as to the hazards likely to arise from weather conditions during the dredging period. The site of work is exposed, and suspension of work may at times be necessary during extreme storm periods. Tidal currents may have an adverse effect on dredging operations. The mean range tide is 1.4 feet, with greater fluctuations occurring during high winds and storm periods.

3.3 Transportation Facilities: The Contractor shall make his own investigation of transportation facilities in the vicinity of the work.

3.4 Conditions of Channel: The best information available as to the present conditions of the Federal channels in Honga River & Tar Bay, Back Creek and Tyler Cove are shown on the contract drawings. The Federal channels were last dredged accordingly: Part of Honga River – 2000; Back Creek – 1956 and Tyler Cove – 1990. The Contractor shall coordinate with the local utility companies for locations of under water utility cables which will obstruct dredging operation. The Contractor shall report any possible obstructions to the Contracting Officer for instruction prior to starting work.

3.5 Channel Traffic: Channel traffic consists of commercial vessels, commercial seafood boats, recreational craft, etc. and may cause minor delays to the dredging operations.

3.6 Obstruction of Channel: The Government will not undertake to keep the channel free from vessels or other obstructions, except to the extent of such regulations, if any, as may be prescribed by the Secretary of the Army, in accordance with the provisions of Section 7 of the River and Harbor Act approved 8 August 1917. The Contractor shall be required to conduct the work in such manner as to obstruct navigation as little as possible, and in case the Contractor's plant so obstructs the channel as to make difficult or endanger the passage of vessels, said plant shall be promptly moved on the approach of any vessels to such an extent as may be necessary to afford a safe practicable passage. Upon completion of the work the Contractor shall promptly remove his plant, including ranges, buoys, piles, and other marks placed by him under the contract in navigable waters or on shore.

3.7 Navigation Aids: The Contractor shall not relocate or move any aids to navigation that have been established by the U.S. Coast Guard. If it becomes necessary to have any aid to navigation moved by the Contractor in order to complete dredging operations under this contract, the Contractor shall notify the Fifth U.S. Coast Guard District, Office of Aids to Navigation, Portsmouth, Virginia 23705, ATTN: Mr. John Walters (757) 398-6230, in writing with a copy to the Contracting Officer or his authorized representative not less than 21 days prior to such need for movement. The Contractor shall notify the U.S. Coast Guard of the approximate time the navigation aid may be relocated to its original position.

3.8 Laying of Submerged Pipe Lines and Obstruction of Channel: Should it become necessary in the performance of this contract to use a submerged pipeline across a navigable channel the Contractor shall notify the Contracting Officer in writing to be received in the District Office at least 15 working days prior to the desired closure date. This notification shall furnish the following:

(a) Location (Channel Centerline Stationing) and depth (over the top of the pipeline) at which the submerged line will be placed.

(b) The desired length of time the channel is to be closed.

(c) The date and hour placement or removal will commence.

(d) The date and hour of anticipated completion.

3.9 Notice To Mariners: Should the Contractor, during dredging operations, encounter any objects on the channel bottom which could be a hazard to navigation, he shall immediately notify the Contracting Officer or his authorized representative as to the location of said object and any other pertinent information necessary for the Contracting Officer or his authorized representative to put out a Notice to Mariners.

3.10 Bridge-to-Bridge Radio Communication: In order that radio communication may be made with passing vessels, all dredges engaged in work under this contract shall be equipped with bridge to bridge radio telephone equipment.

The Contractor is required to monitor both channels 13 and 16.

Channel 13: The master, operator, or designated pilot of the vessel must maintain a listening watch on the designated bridge-to-bridge frequency while underway on the navigable waters of the United States. The designated frequency is VHF-FM Channel 13. The person maintaining the watch also must be able to communicate in English.

Channel 16: In addition to the Channel 13 watch, vessels must keep a continuous watch on VHF-FM Channel 16 (International Distress and Calling Channel) while underway, except when transmitting or receiving traffic on other VHF-FM channels (e.g., vessels may switch to other channels to pass traffic, listen to weather reports, etc.) or when participating in and monitoring a VTS channel. While not required to have a VHF-FM radio onboard (Voluntary Ship Stations), vessels not

subject to the bridge-to-bridge regulations must maintain a watch on Channel 16 whenever the radio, if onboard, is operating (i.e., energized) and is not being used to communicate on other channels.

3.11 Notification of the Coast Guard: Prior to commencement of work on this contract, the Contractor shall notify the Commander, Fifth U.S. Coast Guard District of his intended operations to dredge and request that it be published in the Local Notice to Mariners. This notification must be given in sufficient time so that it appears in the Notice to Mariners at least one week prior to the commencement of this dredging operation.

3.12 Shellfish Areas: Shellfish areas exist in the vicinity of the area to be dredged. Dredging operations shall be conducted in such a manner as to avoid possible damage to these grounds. The Contractor is advised to exercise caution in his dredging and any other operations attendant with dredging (such as the construction of trestles; the movement and anchoring of barges, vessels, or other equipment; the placing or moving of anchors, and leaking pipelines) to prevent damage to all oyster grounds.

4. LAYOUT OF WORK: CENABEN 1984 APR

4.1 The Contractor shall be responsible for the layout of his work. The Government will furnish the channel centerline coordinates and bearings at the beginning point, at each point where the channel changes direction, and at the ending point; and the channel toe coordinates and bearings of both sides of the channel at the beginning point, at each point where the channel changes direction, and at the ending point. The Government will furnish the coordinates and the monument descriptions of the existing horizontal and vertical control within the project area. The Contractor shall be responsible, by utilizing this data, to dredge within the dredging prisms that are shown on the contract drawings. The Contractor shall maintain, preserve, repair or replace, at his own expense, any gages or location markers that are lost, damaged or destroyed for any reason subsequent to their initial establishment by the Contracting Officer until authorized to remove them. The Contractor may, at his option, establish offset stakes, back-up stakes, and gages to be utilized in re-establishing any baseline, ranges and gages that are lost, damaged or destroyed. The contract completion time will not be increased due to work delays that result from the failure of the Contractor to maintain, repair or replace the Government established baselines, ranges and gages.

4.2 The Contractor shall give the Contracting Officer or his authorized representative adequate advance notice of the commencement of work in order to assure the timely completion of the before dredging survey and the establishment of necessary dredging layouts. The notice shall be furnished at least 15 days prior to mobilization of the dredge plant to the work site. It is understood that the survey made in response to this notice will constitute the before dredging survey and any subsequent surveys occasioned through Contractor delays may be charged against the Contractor at a rate of $1,200.00 per day. If the Contractor fails to provide adequate advance notice, the Contracting Officer will not be responsible for any delays in the commencement of work caused by incomplete dredging layouts.

4.3 Datum and Bench Marks: The plane of reference MLLW (NOS), mean lower low water as established by National Ocean Survey, shall be used in these specifications for dredging operations.

4.4 Horizontal Control: Horizontal control data will be provided to the Contractor on request. This request should be made to the Hydrographic Survey Team, Navigation Branch, telephone number (410) 962-6031.

5. SIGNAL LIGHTS:

5.1 The Contractor shall display lights and conduct his operations in accordance with the General Regulations of the Department of the Army and of the Coast Guard governing lights and day signals to be displayed by towing vessels with tows on which no signals can be displayed, vessels working on wrecks, dredges, and vessels engaged in laying cables or pipe or in submarine or bank protection operations, lights to be displayed on dredge pipe lines, and day signals to be displayed by vessels of more than 65-feet in length moored or anchored in a fairway or channel, and the passing by other vessels of floating plant working in navigable channels, as set forth in Commandant U.S. Coast Guard Instruction M16672.2, Navigation Rules: International-Inland (Comdtinst M16672.2), or 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 89 (Inland) as applicable. (DAEN-PRP-1984 JUL)

5.2 Marking of Floating Dredge Pipeline: The Contractor shall mark and maintain the floating dredge pipeline in accordance with U.S. Coast Guard navigation rules, inland - NX5-88.15. As a minimum the Contractor shall mark the pipeline with amber lights visible on all points of the horizon for 2 miles on a clear night. The lights shall flash at 50-70 times per minute and be placed between 1 and 3.5 meters above the water. Spacing shall be sufficient to clearly show the pipeline length and course. Where the pipeline crosses a navigable channel spacing shall be every 10 meters. Two red lights, visible on all points of the horizon, shall be displayed at each end of the floating pipeline. They shall be arranged vertically 1 meter apart with the lower light at the same elevation as the amber lights.

6. ACCOMMODATIONS AND MEALS FOR INSPECTORS: (1965 APR OCE)

6.1 The Contractor shall furnish to inspectors a suitable room for an office. The room shall be fully equipped and maintained to the satisfaction of the Contracting Office; it shall be properly heated, ventilated, and lighted and they shall have a desk which can be locked, a comfortable bed and chair for each inspector, and washing conveniences. The entire cost to the Contractor for furnishing, equipping, and maintaining the foregoing accommodations shall be included in the contract price. If the Contractor fails to meet these requirements, the facilities referred to above will be secured by the Contracting Officer, and the cost thereof will be deducted from payments to the Contractor.

6.2 If the Contractor maintains on this work establishment for the subsistence of his own employees, he shall, when required, furnish to inspectors employed on the work and to all Government agents who may visit the work on official business, meals of a quality satisfactory to the Contracting Officer.

The meals furnished will be paid for by the Government at a rate of $3.50 per person for each meal.

7. CONTRACTOR QUALITY CONTROL: Contractor Quality Control is the means by which the Contractor verifies that his construction/dredging complies with the requirements of the contract specifications. Contractor Quality Control shall be adequate to cover all construction/dredging operations including both onsite and offsite fabrication and will be keyed to the proposed construction/dredging sequence.

7.1 General: The Contractor shall provide and maintain an effective quality control program that complies with the Special Contract Requirement INSPECTION OF CONSTRUCTION. The Contractor's Quality Control Program through inspection, testing, equipment/system operation, and reporting shall demonstrate and document the extent of compliance of all work with the standards and quality established by the contract documents. Inspection and test reports shall make reference to specific drawing and/or specification requirements and shall state inspection/test procedures with both expected and actual results.

The burden-of-proof of contract compliance is placed on the Contractor and not assumed by the Government. The Contractor's Quality Control will not be accepted without question.

7.2 Quality Control Plan: Within 7 calendar days after receipt of Notice to Proceed the Contractor shall furnish his Quality Control Plan and three copies thereof to the Contracting Officer or his authorized representative for review and approval. The plan shall cover in detail each feature of the project including dredging and disposal operations. Copies of the Quality Control Plan shall be made available on the dredge and at the disposal area. The Quality Control Plan the Contractor proposes to implement shall identify the personnel, procedures, instructions, records, and forms, and as a minimum, shall include:

(a) A description of the quality management organization.

(b) The number, classifications, qualifications, duties, responsibilities and authorities of personnel. A copy of the letter signed by an authorized official of the firm, which describes the responsibilities and delegates the authorities of the system manager, shall be furnished.

(c) Procedures for processing reports, samples and other submittals.

(d) Quality control activities to be performed, including those of subcontractors.

(e) Compliance inspections recorded on the Daily Quality Control Report and the Dredging Report, a sample of which is shown at the end of these specifications.

Construction or dredging will be permitted to begin only after approval of the Quality Control Plan, or approval of that portion of the plan applicable to the particular feature of work to be started.

As an additional measure to the implementation of the Quality Control Plan, the Contractor shall meet with representatives of the Contracting Officer as soon as practicable after receipt of Notice to Proceed and before start of construction or dredging to discuss the Contractor's quality control system. The meeting shall develop a mutual understanding relative to details of his Quality Control Program including the forms for recording the quality control operations; control activities, testing, administration of the system for both onsite and offsite, and the interrelationship of Contractor and Government control and surveillance. Minutes of the meeting shall be prepared, signed by both the Contractor and the Contracting Officer or his authorized representative and shall become a part of the contract file. There may also be occasions when subsequent conferences will be called to reconfirm understandings.

7.2.1 Notification of Changes: After approval of the Quality Control Plan, the Contractor shall notify the Contracting Officer or his authorized representative in writing of any proposed change.

7.2.2 Work Deficiencies: The Contractor shall not build upon or conceal any work containing uncorrected defects. If deficiencies indicate that the Contractor's quality control system is not adequate or does not produce the desired results, corrective actions in both the quality control system and the work shall be taken by the Contractor. If the Contractor does not promptly make the necessary corrections, the Contracting Officer may issue an order stopping all or any part of the work until satisfactory corrective action has been taken. Payment for deficient work will be withheld until work as been satisfactorily corrected or other action is taken pursuant to the Special Contract Requirement INSPECTION OF CONSTRUCTION.

If the above does not obtain effective improvement in the Contractor's quality control system, the Contracting Officer or his authorized representative may direct changes be made in the quality control system and/or organization, including but not limited to the removal and replacement of unsatisfactory quality control representatives at any level or the addition of quality control personnel or services. Any additional cost to the Government for providing quality control services that are not satisfactorily performed by the Contractor, will be deducted from payment due the Contractor.

If recurring deficiencies in an item or items indicate that the quality control system is not adequate, such corrective actions shall be taken as directed by the Contracting Officer or his authorized representative.

7.3 Quality Control Organization:

7.3.1 System Manager: The Contractor shall identify an individual within his organization at the site of the work, who shall be responsible for overall management and have the authority to act in all Contractor quality control matters for the Contractor.

7.3.2 Personnel: A staff shall be maintained under the direction of the system manager to perform all quality control activities. The actual strength of the staff during any specific work period may vary to cover work phase needs, shifts, and rates of dredging. At least one full-time Contractor quality

control person fully alert and awake shall be present on the disposal area at all times pumping operations are in progress. The personnel of this staff shall be fully qualified by experience and technically trained to perform their assigned responsibilities.

7.4 Control: The Contractor's quality control system shall include at least the following three phases of control and management for definable features of work:

(a) Preparatory: Twenty-four hours in advance of beginning any definable features of work, the Contractor's quality control manager shall review with the Government inspector(s) the applicable provisions of the specifications and Quality Control Plan and confirm the methods to assure compliance.

(b) Initial: This phase of control must be accomplished at the time of arrival of disposal area and dredging personnel on site to accomplish a definable feature of work and at any time new workmen or crews arrive for assignment to the work. The Contractor's control system must permit the transfer of information on quality requirements specified in this contract to each workman before he starts, demonstration from each workman that he can provide the specified quality of work, and motivate him to continue. It is also during this phase that control testing to prove the adequacy of the Contractor's control procedures shall be initiated and verified. The Contracting Officer or his authorized representative shall be notified at least 24 hours in advance of each initial activity.

(c) Follow-up: The follow-up phase shall be performed continuously to verify that control procedures are providing an end product which complied with contract requirements. Adjustments to control procedures may be required based upon the results of this phase and compliance inspections.

7.5 Completion: At the completion of the work, the Contractor's quality control representative shall conduct a joint completion review with the Government inspector(s). During this review the work shall be examined, quality control shall be reviewed, and a list shall be developed of work not properly completed or not conforming to plans and specifications. This list shall be included in the quality control documentation with an estimated date for correction of each deficiency. The Contractor shall make sure that deficiencies have been corrected prior to the specified completion date. Payment will be withheld for defective or deficient features until they are satisfactorily corrected except as otherwise provided in the Special Contract Requirement INSPECTION OF CONSTRUCTION.

7.6 Quality Control Records:

7.6.1 The Contractor shall maintain current records, on an appropriate approved form, of quality control operations, activities, and tests performed including the work of suppliers and subcontractors. These records shall include factual evidence that the required activities or tests have been performed, including but not limited to the following:

(a) Type and number of control activities and compliance inspections.

(b) Results of control activities or inspections.

(c) Nature of defects, causes for rejection, etc.

(d) Proposed remedial action.

(e) Corrective actions taken.

7.6.2 These records shall cover both conforming and defective or deficient features and shall include a statement that supplies and materials incorporated in the work comply with the contract. The Contractor shall submit legible, daily quality control reports to the Government inspector on the day following the report period. The records shall cover development of the disposal area(s),related piping, and dredging performed during the time period for which the records are furnished. These records shall be verified by person so designated by the Contractor. Failure to follow these procedures will be considered a breach of the Quality Control Program and portions of the progress payment may be withheld until it is demonstrated by the Contractor that the construction activities covered by the delinquent reports meet the requirements of the plans and specifications.

7.7 Measurement and Payment: No separate measurement and payment will be made for the work performed in Contractor Quality Control, specified herein, and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor, and shall be included in the overall cost of the work.

8. EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (EFARS 52.0231.5000 (OCT 1995))

(a) This clause does not apply to terminations. See 52.249-5000, Basis for settlement of proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable conditions owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual costs data for each piece of equipment or groups of similar serial and services for which the government can determine both ownership and operating costs from the contractor’s accounting records. When both ownership and operating costs can not be determined for any piece of equipment or groups of similar serial or series equipment from the contractor’s accounting records, costs for that equipment shall be based upon the applicable provisions of EP1110-1-8 Construction Equipment Ownership and Operating Expenses Schedule, Region East. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d) (ii) and Far 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established proactive of leasing the same or similar equipment to unaffiliated leasees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet. CENAB-CT/SEP 95 (EFARS 52.231-5000)

9. SAFETY:

9.1 General: The Contractor shall comply with the Contract Clause ACCIDENT PREVENTION. EM 385-1-1, September 1996, subject: Safety and Health Requirements Manual, is a part of these specifications.

9.1.1: The Contractor shall comply with the provisions of EM 385-1-1. If the Contractor is a currently accepted participant in the Dredging Contractors of America (DCA)/United States Army Corps of Engineers (USACE) Dredging Safety Management Program (DSMP), as determined by the DCA/USACE Joint Committee, and holds a current valid Certificate of Compliance for both the Contractor Program and the Dredge(s) to be used to perform the work required under this contract, the Contractor may, in lieu of the submission of an Accident Prevention Plan (APP),

(1) make available for review, upon request, the Contractor's current Safety Management System (SMS) documentation,

(2) submit to the Contracting Officer the current valid Company Certificate of Compliance for its SMS,

(3) submit the current dredge(s) Certificate of Compliance based on third party audit, and

(4) submit for review and acceptance, site-specific addenda to the SMS as specified in the solicitation.

9.2 Accident Prevention Program: Within 7 calendar days after receipt of Notice to Proceed the Contractor shall furnish his Accident Prevention Program and three copies thereof to the Contracting Officer or his authorized representative for review and approval. The program shall be prepared in the following format:

(a) Administrative Plan

(b) Job Hazard Analysis

(c) A copy of company policy statement of accident prevention and any other guidance statements normally provided new employees.

(d) When marine plant and equipment are in use the Contractor shall assure that oil transfer operations to or from his plant comply with all Federal, State, county, and Municipal laws, codes and regulations. Particular attention is invited to 33 CFR Subchapter 0, POLLUTION. The Contractor shall incorporate in his accident prevention program, submitted in compliance with Contract Clause ACCIDENT PREVENTION, sufficient information to demonstrate that all fuel transfers will be made in accordance with 33 CFR 156 and any other applicable laws, codes and regulations. (CENABEN 1984 APR)

(e) The Contractor shall not commence physical work at the project site until the program has been approved by the Contracting Officer or his authorized representative. As an additional measure to implementation of the Accident Prevention Program, the Contractor shall meet with representatives of the Contracting Officer as soon as practicable after receipt of Notice to Proceed and before start of work to discuss and develop a mutual understanding relative to administration of the overall safety program. Minutes of the meeting shall be prepared, signed by the Contractor and the Contracting Officer or his authorized representative. At the Contracting Officer's discretion, the Contractor may submit his Job Hazard Analysis only for the phases of construction. All remaining phases shall be submitted and accepted prior to the beginning of work in each phase. EM 385-1-1, Section 1.

9.3 Accident Investigation and Reporting: Accidents shall be investigated by immediate supervisor of the employee(s) involved and reported to the Contracting Officer or the Government inspector within one working day after the accident. Paragraph 01.D, EM 385-1-1.

(a) The Contractor shall insure that all accidents which involve loss of life, occupational disease of the employee, injury incapacitating any person for normal work beyond the day of injury, or damage to property, materials, supplies, or equipment, of $1,000.00 or more, and which relate to the dredge, any attendant plant, the dredge working area, or the disposal area, shall be recorded, investigated, and reported to the Contracting Officer or his authorized representative.

(b) Each accident shall be verbally reported to the Government inspector at the earliest practicable time, but within 24 hours. Each accident involving loss of life or traumatic injury to any person shall be reported to the Government inspector verbally, telephonically, or by radio immediately.

(c) The Contractor shall promptly investigate each accident and submit a written, signed report on ENG Form 3394 to the Government inspector within 48 hours.

(d) A factual record of each accident shall be entered in the Contractor's official daily log book.

9.4 Daily Inspections: The Contractor shall institute a daily inspection program to assure all safety requirements are being fulfilled. Reports of daily

inspections shall be maintained in the Contractor's official daily log book. The reports shall be records of the daily inspections and resulting actions. Each report shall include, as a minimum, the following:

(a) Phase(s) of construction underway during the inspection.

(b) Locations of areas inspections were made.

(c) Results of inspection, including nature of deficiencies observed and corrective actions taken, or to be taken, date, and signature of the person responsible for its contents.

9.5 Means of Escape for Personnel Quartered or Working on Floating Plant: Two means of escape shall be provided for assembly, sleeping, and messing areas on floating plants. For areas involving 10 or more persons, both means of egress shall be through standard size doors opening to different exit routes. Where 9 or fewer persons are involved, one of the means of escape may be a window (minimum dimensions 24-inch by 36-inch) which leads to a different exit route. EM 385-1-1, Section 19.

9.6 Emergency Alarms and Signals:

9.6.1 Alarms. Emergency alarms shall be installed and maintained on all floating plant requiring a crew where it is possible for either a passenger or crewman to be out of sight or hearing from any other person. The alarm system shall be operated from the primary electrical system with standby batteries on trickle charge that will automatically furnish the required energy during an electrical-system failure.

9.6.2 Signals:

(a) Fire Alarm Signals: The general fire alarm signal shall be in accordance with paragraph 97.13-15b of the Coast Guard Rules and Regulations for Cargo and Miscellaneous Vessels, Subchapter I, 1 Sep 77 (CG 257)

(b) Abandon Ship Signals: The signal for abandon ship shall be in accordance with paragraph 97.13-15c of referenced cited in (a) above.

(c) Man-Overboard Signal: Hail and pass the word to the bridge. All personnel and vessels capable of rendering assistance shall respond.

9.7 Mooring Lines: Eye loops on mooring lines shall be equipped with brackets or handling ropes to protect the hands of deckhands.

10. FUEL USAGE: The Contractor shall furnish the Contracting Officer a report, to be received on or before the last day of the calendar month, listing the totals of fuels consumed by the dredging plant and supporting vessels. The report shall list the quantities of different fuels separately. The report shall cover the period from the 25th of the preceding month to the 25th of the current month. This information may be included in the Contractor's Daily Report of Operations.

11. ENVIRONMENTAL LITIGATION: (1974 NOV OCE)

(a) If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or a Subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a Subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Contracting Officer in the administration of this contract under the terms of the Contract Clause SUSPENSION OF WORK. The period of such suspension, delay or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provisions thereof.

(b) The term "environmental litigation", as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

12. WORK AT NIGHT: For night operations the Contractor shall provide and maintain, at his expense, two light towers equipped with a 3 KW generator (minimum) at the dredged material placement site. Each light tower shall have metal halide bulbs (1000 watt) or equivalent, capable of giving off a minimum of 200,000 lumens. No work will be permitted after dusk without the aid of both light towers.

13. RADIO COMMUNICATIONS: At all times pumping operations are in progress, the Contractor is responsible and required to provide any and all equipment necessary to maintain 24-hour oral communication between the dredge operator, Quality Control System Manager, and the Corps of Engineers' inspector on site. For this purpose, the Contractor shall provide and maintain at his expense a marine band walkie-talkie radio for use by the Government inspector(s). The Contractor is responsible for any and all circumstances not conforming to the plans and specifications resulting from the inadequate operation of the equipment.

14. PROGRESS SCHEDULING AND REPORTING: (JUN 1975) In accordance with the Contract Clauses, the Contractor, shall within 5 days or as otherwise determined by the Contracting Officer, after date of commencement of work, submit for approval a practicable progress schedule showing the manner in which he intends to prosecute the work. ENG Form 2454 ("Construction Progress Chart") will be furnished upon request for use in preparing this schedule. If a Contractor form is used, the same information as shown in the ENG Form 2454 shall be provided. Preparation and updating of the schedule shall be as follows:

14.1 Preparation: The progress schedule shall be prepared in the form of time-scaled summary network diagram graphically indicating the sequence proposed to accomplish each work activity or operation, and appropriate interdependencies between the various activities. The chart shall show the starting and

completion dates of all activities on a linear horizontal time scale beginning with the dates of Notice to Proceed and indicating calendar days to completion. Each activity in the construction shall be represented by an arrow and shall have a beginning and ending node (event). The entire project shall have only one beginning node and one ending node. The arrangement of arrows shall be such that they flow from the left to right. Each arrow representing an activity shall be annotated to show the activity description, duration and cost. The Contractor shall indicate on the chart the important work activities that are critical to the timely overall completion of the project. Key dates for important features or portions of work features are milestone dates and shall be so indicated on the chart. Based on this chart, the Contractor shall prepare an earnings-time curve (S Curve) showing the rate of progress in terms of money and percent completion. Schedule progress may not include the value of materials or equipment delivered to the job site but not yet incorporated into the work. This schedule shall be the medium through which the timeliness of the Contractor's construction effort is appraised.

14.2 Updating: The Contractor shall update the schedule by entering actual progress thereon at monthly intervals. The status of activities completed or partially completed as of the end of each period shall be shown, as well as the percentage of work completed. In computing actual progress, the value of material and equipment on site but not incorporated into the work may not be considered. When changes are authorized that result in contract time extensions, the Contractor shall submit a modified chart for approval by the Contracting Officer. The Contract Clause SCHEDULES FOR CONSTRUCTION CONTRACTS with reference to overtime, extra shifts, etc., may be invoked when the Contractor fails to start or complete work activities or portions of same by the date indicated on the approved progress chart, or when it is apparent to the Contracting Officer from the Contractor's actual progress that these dates will not be met. (CENABCO-E)

15. CONTINUITY OF WORK: No payment will be made for work done in any area designated by the Contracting Officer until the full depth required under the contract is secured in the whole of such area, unless prevented by ledge rock, nor will payment be made for excavation in any area not adjacent to and in prolongation of areas where full depth has been secured except by decision of the contracting officer. Should any such nonadjacent area be excavated to full depth during the operations carried on under the contract, payment for all work therein may be deferred until the required depth has been made in the area intervening. The Contractor may be required to suspend dredging at any time when for any reason the gages or ranges cannot be seen or properly followed.

16. MISPLACED MATERIAL: Should the Contractor during the progress of the work, lose, dump, throw overboard, sink, or misplace any material, plant machinery, or appliance, which in the opinion of the Contracting Officer may be dangerous to or obstruct navigation, the Contractor shall recover and remove the same with the utmost dispatch. The Contractor shall give immediate notice, with description and location of such obstructions, to the Contracting Officer or inspector, and when required shall mark or buoy such obstructions until the same are removed. Should he refuse, neglect, or delay compliance with the above requirements, such obstructions may be removed by the Contracting Officer, and the cost of such removal may be deducted from any money due or to become due to

the Contractor, or may be recovered under his bond. The liability of the Contractor of the removal of a vessel wrecked or sunk without fault or negligence shall be limited to that provided in Section 15, 19, and 20 of the River and Harbor Act of March 3, 1899 (33 U.S.C. 410 et seq.).

17. INSPECTION: The Government inspector(s) will direct the maintenance of the gauges, ranges, location marks and limit marks in proper order and position; but the presence of the Government inspector(s) shall not relieve the Contractor of responsibility for the proper execution of the work in accordance with the specifications. The Contractor shall be required:

(a) To furnish, on the request of the Contracting Officer, any Government inspector, or authorized representative, the use of such boats, boatmen, laborers, and material forming a part of the ordinary and usual equipment and crew of the dredging plant as may be reasonably necessary in inspecting and supervising the work. However, the Contractor will not be required to furnish such facilities for the surveys prescribed in the Special Clause FINAL EXAMINATION AND ACCEPTANCE.

(b) To furnish, on the request of the Contracting Officer, any Government inspector, or authorized representative, suitable transportation from all points on shore designated by the Contracting Officer to and from the various pieces of plant, and to and from the disposal site.

(c) Should the Contractor refuse, neglect, or delay compliance with these requirements, the specific facilities may be furnished and maintained by the Contracting Officer, and the cost thereof will be deducted from any amounts due or to become due the Contractor.

18. FINAL EXAMINATION AND ACCEPTANCE:

(a) As soon as practicable after the completion of the entire work or any section thereof (if the work is divided into sections) as in the opinion of the Contracting Officer or his authorized representative will not be subject to damage by further operations under the contract, such work will be thoroughly examined at the cost and expense of the Government by sounding or by sweeping, or both, as determined by the Contracting Officer or his authorized representative. Should any shoals, lumps, or other lack of contract depth be disclosed by this examination the Contractor shall be required to remove same by dragging the bottom or by dredging at the contract rate for dredging, but if the bottom is soft and the shoal areas are small and form no material obstruction to navigation, the removal of such shoal may be waived by the discretion of the Contracting Officer or his authorized representative. The Contractor or his authorized representative will be notified when soundings and/or sweepings are to be made, and will be permitted to accompany the survey party. When the area is found to be in a satisfactory condition, it will be accepted finally. Should more than two sounding or sweeping operations by the Government over an area be necessary by reason of work for the removal of shoals disclosed at a prior sounding or sweeping, the cost of such third and any subsequent sounding or sweeping operations will be charged against the Contractor at the rate of $1,200.00 per day for each day in which the Government plant is engaged in sounding or sweeping and/ or is enroute to or from the site or held at or near

the said site for such operations.

(b) Final acceptance of the whole or a part of the work and the deductions or corrections of deductions made thereon will not be reopened after having once been made, except on evidence of collusion, fraud, or obvious error, and the acceptance of a completed section shall not change the time of payment of the retained percentages of the whole or any part of the work.

19. SHOALING:

19.1 If, before the contract is completed, shoaling occurs in any section previously accepted, including shoaling in the finished channel, because of the natural lowering of the side slopes, redredging at contract price, within the limit of available funds, may be done if agreeable to both the Contractor and the Contracting Officer.

19.2 If before dredging survey indicates shoaling in the channel immediately adjacent to the channel to be dredged, the Contractor shall be required to dredge the additional shoaling at the contract unit price if directed by the Contracting Officer.

20. ENVIRONMENTAL PROTECTION:

20.1 General: The Contractor shall furnish all labor, materials and equipment, to perform all work required for the prevention of environmental pollution during, and as the result of, construction/dredging operations under this contract except for those measures set forth in the technical Provisions of these specifications. For the purpose of this specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; or affect other species of importance to man. The control of environmental pollution requires consideration of air, water, and land.

20.2 Applicable Regulations: The Contractor and his subcontractors in the performance of this contract, shall comply with all applicable Federal, State, and local laws and regulations concerning environmental pollution control and abatement in effect on the date of this solicitation, as well as the specific requirements stated elsewhere in the contract specifications.

20.3 Notification: The Contracting Officer or his authorized representative will notify the Contractor of any noncompliance with the foregoing provisions and the action to be taken. The Contractor shall, after receipt of such notice, immediately take corrective action. If the Contractor fails or refuses to comply promptly, the Contracting Officer or his authorized representative may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of time lost due to any such stop order shall be made subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

20.4 Subcontractors: Compliance with the provisions for environmental

protection by subcontractors shall be the responsibility of the Contractor.

20.5 Protection of Water Resources: The Contractor shall not pollute streams, lakes or reservoirs with fuels, oils, bitumens, calcium chloride, acid construction wastes, or other harmful materials. All work under this contract shall be performed in such a manner that objectionable conditions will not be created in streams through or adjacent to the project area. The Contractor shall take special positive protective measures to prevent spillage of potential pollutant materials such as fuel, emulsion materials, chemicals etc., from storage containers or equipment into public waters. Such positive protective measures may include, but not limited to the following:

(a) A berm enclosure of sufficient capacity to contain such materials.

(b) Security measures to prevent acts of vandalism which could result in spillage of such materials (fences, guards, etc.).

(c) Storage of such materials in an area where the terrain would preclude leakage into public waters.

(d) Utilization of secure Government storage areas if the Contracting Officer indicates such space is available. No storage past immediate needs (2 days) without the consent of the Contracting Officer or his authorized representative.

20.6 Burning: Burning shall be in compliance with Federal, State, and local laws. The Contractor shall be responsible for obtaining all required burning permit approvals.

20.7 Dust Control: The Contractor shall maintain all work areas free from dust which would contribute to air pollution. Approved temporary methods of stabilization consisting of sprinkling, chemical treatment, light bituminous treatment or similar methods will be permitted to control dust. Sprinkling, where used, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

20.8 Protection of Land Resources:

20.8.1 General: It is intended that land resources within the project boundaries and outside the limits of the permanent work performed under this contract be preserved in their present condition or be restored to a condition after completion of construction that will appear to be natural and not detract from the appearance of the project. Insofar as possible, the Contractor shall confine his construction activities to areas defined by the plans and specifications or to be cleared for other operations. The following additional requirements are intended to supplement and clarify the requirements of the CONTRACT CLAUSES.

20.8.2 Protection of Trees Retained:

(a) The Contractor shall be responsible for the protection of the tops,

trunks, and roots of all existing trees that are to be retained on the site. Protection shall be maintained until all work in the vicinity has been completed and shall not be removed without the consent of the Contracting Officer or the authorized representative of the contracting officer. If the Contracting Officer or his authorized representative finds that the protective devices are insufficient, additional protection devices shall be installed.

(b) Heavy equipment, vehicular traffic, or stockpiling of any materials shall not be permitted within the drip line of trees to be retained.

(c) No toxic materials shall be stored within 100 feet from the drip line of trees to be retained.

(d) Except for areas shown on the contract drawings to be cleared, the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without special authority. Existing nearby trees shall not be used for anchorage unless specifically authorized by the Contracting Officer or his authorized representative. Where such special emergency use is permitted, the Contractor or his authorized representative shall first adequately protect the trunk with a sufficient thickness of burlap over which softwood cleats shall be tied.

(e) No protective devices, signs, utility boxes or other objects shall be nailed to trees to be retained on the site.

20.9 Restoration of Landscape Damage: Any tree or other landscape feature scarred or damaged by the Contractor's operations shall be restored as nearly as possible to its original condition at the Contractor's expense. The Contracting Officer or his authorized representative will decide what method of restoration shall be used and whether damaged trees shall be treated and healed or removed and disposed of. All scars made on trees, designated on the plans to remain, and all cuts for the removal of limbs larger than 1 inch in diameter shall be coated as soon as possible with an approved tree-wound dressing. All trimmings or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted. Where tree climbing is necessary, the use of climbing spurs will not be permitted. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Contracting Officer or his authorized representative, shall be immediately removed and replaced with a nursery-grown tree of the same species.

Replacement trees shall measure no less than 2 inches in diameter at 6 inches above the ground level.

20.10 Location of Storage and Service Facilities: The location on Government property of the Contractor's storage and service facilities, required temporarily in the performance of the work, shall be upon cleared portions of the jobsite or areas to be cleared. The preservation of the landscape shall be an imperative consideration in the selection of all sites.

20.11 Temporary Excavation and Embankments: If the Contractor proposes to construct temporary roads, embankments, or excavations for plant and/or work areas, he shall submit a plan for approval prior to scheduled start of such

temporary work.

20.12 Waste Disposal: Disposal of any materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., in areas adjacent to the work site shall not be permitted. If waste material is dumped in unauthorized areas, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed of as directed by the Contracting Officer, replaced with suitable fill material, compacted and planted as required to reestablish vegetation.

20.13 Toilet Facilities: The Contractor shall provide on-shore toilet facilities, in accordance with paragraph 02.B, EM 385-1-1, at the dredged material disposal site. Dredge plant toilet facilities may not be substituted for on-shore facility requirements.

20.14 Corrective Action: The Contractor shall, upon receipt of a notice in writing of any noncompliance with the foregoing provisions, take immediate corrective action. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs of damages by the Contractor unless it was later determined that the Contractor was in compliance.

20.15 Measurement and Payment: No separate measurement and payment will be made for the work performed in Environmental Protection, specified herein, and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor and shall be included in the overall cost of the work.

21. SUBCONTRACTS: In accordance with Section 00100, Instructions, Conditions, and Notices to Bidders, NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY, the Contractor shall, within 10 working days following award of any construction subcontract by the Contractor or a Subcontractor, deliver to the Contracting Officer or his authorized representative a completed DD form 1565.

22. CONTRACTOR'S RESPONSIBILITY: (ECI, APP.A) The Contractor shall be responsible that his employees strictly comply with all Federal, State, and municipal laws that may apply to operations under the contract; and it is understood and agreed that the Contractor assumes full responsibility for the safety of his employees, plant, and materials, and for any damage or injury done by or to them from any source or cause, except damage caused to the plant or equipment by acts of the Government, its officers, agents or employees, in which event such damages will be the responsibility of the Government in accordance with applicable Federal laws. For the purpose of this clause, the terms "officers, agents or employees" of the Government shall not include persons who are employed by the Contractor and whose services have been furnished to the Government pursuant to this or any other contract. (See also FAR 52.236-7 and FAR 52.236-13)

22.1 Responsibility For Contractor Plant and Government Property: The Government will not be responsible for the dredge and attendant plant, any Government property aboard the dredge and attendant plant, or any accidental damage thereto during the period of the contract. The Contractor shall release the Government and its officers and agents from all responsibility for damages to dock facilities, submerged and aerial crossings, bridges, moored vessels, or other damages ordinarily covered by fire and marine insurance. (See also FAR 52.236-9)

22.2 Warranty: The Contractor warrants to the Government the quiet and peaceable use of the aforesaid property, and in case of any disturbance, by suit or otherwise, will defend the same free of charge to the Government in or before the proper State or United States courts.

22.3 Delays: If the Contractor refuses or fails to make delivery of the property within the time specified or any extension thereof, as provided in specifications, or to maintain the property in serviceable condition and diligently and competently to conduct the specified operations, the Government may, by written notice terminate the right of the Contractor to proceed with delivery or with further performance under the contract or such parts or parts thereof affected by the contract or otherwise and the Contractor shall be liable to the Government for any excess cost occasioned thereby.

22.4 Disclaimer: The Contractor shall hold and save harmless the United states, its officers and employees, from all claims that may arise resulting from the Contractor's negligence in connection with the work to be performed under the contract, or from noncompliance by the Contractor with the provisions of the contract, contract drawings, and specifications and/or the instructions of the Contracting Officer or his authorized representative. (See also FAR 52.236-10)

End of Section

SECTION 2 - TECHNICAL PROVISIONS

1. WORK COVERED BY CONTRACT PRICE:

1.1 Payment Item No. 0001: All costs connected with the mobilization and demobilization of the Contractor's dredging plant and equipment furnished for Honga River & Tar Bay, Back Creek and Tyler Cove, Dorchester County, Maryland as defined below shall be included in the contract lump-sum price for Item No. 0001 “Mobilization and Demobilization” as listed in the Unit Price Schedule.

1.1.1 Mobilization shall include all costs for operations accomplished prior to commencement of actual dredging operations, i.e. transfer of dredge, attendant plant, and equipment to site; initial installation of pipe, and disposal area preparation required; and any other work that is necessary in advance of the actual dredging operations.

1.1.2 Demobilization shall include general preparation for transfer of plant to its home base, removal of pipelines, disposal area cleanup, and transfer of plant to its home base.

1.2 Payment Item No. 0002: All costs in connection with the construction of the 4,000 foot long stone containment structure shall be included in the contract lump-sum price for Item No. 0002 “Construction of Stone Containment Structure” as listed in the Unit Price Schedule.

1.3 Payment Item No. 0003: The contract price per cubic yard for the new work dredging of the realigned Honga River channel and maintenance dredging shall include the costs of removal, disposal and grading of all material as specified herein or as indicated on the contract drawings exclusive of mobilization and demobilization costs as defined in paragraphs 1.1, 1.1.1, and 1.1.2. Payment shall be made in accordance with the following:

Item No. 0003A "Maintenance Dredging – Honga River – Back Creek"
Item No. 0003B "Maintenance Dredging – Honga River – East Channel"
Item No. 0003C "Maintenance Dredging – Tyler Cove"
Item No. 0003D "Maintenance Dredging – Honga River – Tar Bay"
Item No. 0003E "New Work Dredging – Honga River – Tar Bay"

as shown in the Unit Price Schedule which shall be full compensation for the work performed.

1.4 Payment Item No. 0004: All costs associated with ordering, obtaining, and delivery of 150,000 plants to be used to create a wetland shall be included in the contract lump-sum price for Item No. 0004 “Wetland Plants” as listed in the Unit Price Schedule.

2. ORDER OF WORK: Placement site designated as “A” on the contract drawings shall be constructed first. The Back Creek Federal channel shall be dredged first. The order of dredging the remaining channels shall be up to the Contractor. However, placement site “C” needs to be predominantly sand.

(a) The Contractor shall furnish, deliver, and operate one cutterhead, hydraulic, pipeline dredge with attendant plant capable of performing dredging, as defined in this specifications, for Honga River & Tar Bay, Back Creek and Tyler Cove Dorchester County, Maryland. The Government reserves the right to inspect the plant prior to award of the contract. If the plant is found insufficient to accomplish the scope of the work, this may be used to consider the Contractor non-responsive and ineligible for award of this contract.

(b) The Contractor shall deliver the dredge and attendant plant ready for operation at the project site within 10 calendar days prior to the initiation of dredging. Upon arrival of the dredge and all attendant plant at the project site in Honga River & Tar Bay, Back Creek and Tyler Cove, Dorchester County, Maryland, the Contracting Officer's appointed inspector(s) will inspect the plant to determine whether any deficiencies have occurred subsequent to the time the plant was brought into compliance pursuant to the pre-award inspection. The Contractor will be notified of acceptance or rejection of the plant within 24 hours after delivery.

(c) Upon Contractor notification and at least 24 hours prior to the commencement of dredging operations the Contractor and Government inspector(s) shall conduct a joint inspection of the completed disposal area operations. No dredging will be permitted to begin until all deficiencies identified by the Government inspector(s) have been satisfactorily corrected by the Contractor.

(d) No dredging shall be permitted unless the Contractor appointed quality control person is present at the disposal area while pumping operations are in progress.

(e) The dredged material shall be deposited in the placement areas designated on the contract drawings. Certain channel material may be designated for specific placement sites.

3. PLANT: Plant and equipment employed on the work shall be in satisfactory operating condition and capable of safely and efficiently performing the work under exposed environmental conditions and as set forth in the specification and shall be subject to inspection by the Contracting Officer at all times. Pipeline for hydraulic machines shall be kept in good conditions at all times, any leaks or breaks along their length shall be promptly and properly repaired. No reduction in the capacity of the plant employed on the work shall be made except by written permission of the Contracting Officer. The measure of the "Capacity of Plant" shall be its actual performance on the work to which these specifications apply. All floating pipelines used as accessways shall be equipped with walkways and guardrail conforming to paragraph 19.B.05 of Corps of Engineers Manual EM 385-1-1.

4. CHARACTER OF MATERIALS: The maintenance material to be removed to restore the depth within the limits shown on the contract drawings, is that composing the shoaling that has occurred since the channel was last dredged except for the realignment of the Honga River which has not been dredged before and is considered new work. All other channels have previously been dredged at a required depth of 6 or 7 feet plus 2 feet of allowable overdepth. It is believed that the material to be removed will consist principally of shell,

clay, sand, silt, mud, gravel, debris, trash and combinations thereof. Minor variations in the subsurface materials are to be expected and, if encountered, shall not be considered as being materially different within the purview of the Contract Clause DIFFERING SITE CONDITIONS. Bidders are expected to examine the site of the work, and decide for themselves the character of the materials. The physical data for the Federal channels is located at the end of the specifications.

5. GEOTEXTILE FOR STONEWORK

5.1 Scope: The Contractor shall provide all labor, materials, tools, equipment, and incidentals necessary to perform all work required to install geotextile material on the foundation for the jetty, complete as specified herein and shown on the Contract Drawings. This includes maintaining the geotextile until placement of the overlying stone material is completed and accepted.

5.2 References: The publications listed below form a part of the specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3786	(1987) Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Bursting Strength Tester Method
ASTM D 4354	(1996) Sampling of Geosynthetics for Testing
ASTM D 4355	(1992) Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
ASTM D 4491	(1999) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991;R1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4595	(1986) Tensile Properties of Geotextiles by the Wide-Width Strip Method
ASTM D 4632	(1991;R1996) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1999) Determining the Apparent Opening Size of a Geotextile
ASTM D 4759	(1988; R 1996) Determining the Specification Performance of Geosynthetics
ASTM D 4833	(1988;R1996) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products

ASTM D 4873 (1997) Identification, Storage, and Handling of Geotextiles

ASTM D 4884 (1996) Seam Strength of Sewn Geotextiles

5.3 Submittals: Submittals required for this section of the specifications are shown on the submittal registers presented in Section 2, PARAGRAPH: SUBMITTAL PROCEDURES. Government approval is required for submittals with a "GA" designation. Submittals having an "FIO" designation are for information only.

5.4 Delivery, Storage, and Handling:

5.4.1 General. Geotextile shall be delivered only after the required submittals have been received and approved by the Contracting Officer. Geotextiles shall be labeled, shipped, stored, and handled in accordance with ASTM D 4873 and as specified herein. Each roll shall be wrapped in an opaque and waterproof layer of plastic during shipment and storage. The plastic wrapping shall be placed around the geotextile roll in the manufacturing facility and shall not be removed until deployment. Each roll shall be labeled with the manufacturers name, geotextile type, lot number, roll number, and roll dimensions (length, width, gross weight). Appropriate handling equipment and techniques, as recommended by the manufacturer and approved by the Contracting Officer, shall be used. Geotextile or plastic wrapping damaged as a result of delivery, storage, or handling shall be repaired or replaced, as directed, at no additional cost.

5.4.2 Handling. No hooks, tongs or other sharp instruments shall be used for handling geotextile. Geotextile shall not be dragged along the ground.

5.4.3 Storage. Geotextile shall be stored in areas where water cannot accumulate, elevated off the ground, and protected from conditions that will affect the properties or performance of the geotextile. Geotextile shall not be exposed to temperatures in excess of 140 degrees F or less if recommended by the manufacturer. Outdoor storage shall not be for periods which exceed the manufacturers recommendations, or for two months, whichever is less.

5.5 Materials:

5.5.1 General Requirements. The geotextile shall be a woven pervious sheet of polymeric yarn. Fibers used in the manufacture of the geotextile shall consist of long-chain synthetic polymers composed of at least 85% by weight polyolefins, polyesters, or polyamides. Stabilizers and/or inhibitors shall be added to the base polymer if necessary to make the filaments resistant to deterioration by ultra-violet light and heat exposure. Reclaimed or recycled fibers or polymer shall not be added to the formulation. Geotextile shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including the edges. The geotextile physical properties shall equal or exceed the minimum average roll values listed in Table 1. Acceptance of geotextile shall be in accordance with ASTM D 4759. Strength values shown are for the weaker principle direction. The Contractor shall submit

a minimum 12 inch by 12 inch sample of the geotextile to the Contracting Officer. A written certificate of compliance or affidavit signed by the legally authorized official from the geotextile manufacturer, certifying that the material meets the specified properties, shall be submitted at least 14 days before delivery of the geotextile to the site.

TABLE 1. GEOTEXTILE PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TEST VALUE
Apparent Opening	ASTM D 4751	No finer than the (U.S. Sieve) No. 100 and no coarser than the No. 40
Permittivity, sec^{-1}	ASTM D 4491	0.15
Puncture, lbs.	ASTM D 4833	120
Grab Tensile, lbs.	ASTM D 4632	315
Burst Strength, psi	ASTM D 3786	600
Trapezoidal Tear, lbs.	ASTM D 4533	120
Ultraviolet Degradation (percent strength retained at 500 hours)	ASTM D 4355	70%
Factory Seam Strength, (seam efficiency in percent of fabric strength as determined by ASTM D 4595)	ASTM D 4884	90%
Field Seam Strength, (percent of grab tensile strength of the geotextile)	ASTM D 4632	85%

5.5.2 Manufacturing, Sampling, and Testing. Geotextiles and factory seams shall meet the requirements specified in Table 1. Conformance testing shall be performed on random samples in accordance with the manufacturers approved quality control manual.

5.6 Installation: Within 10 days after notice to proceed, the Contractor shall submit his Plan of Installation for the geotextile to the Contracting Officer for approval. The plan should incorporate the requirements of these specifications with respect to materials, deployment, anchoring, and placement procedures. Alternate fabrication details or installation techniques may be submitted for consideration by the Contracting Officer. However, rejection of alternate methods suggested by the Contractor shall not constitute a basis for claim against the Government.

5.6.1 Surface Preparation. The underlying surface shall be smooth and free of protrusions which could damage the geotextile. Where geotextile is

placed on the landward side of the structure, the surface of the armor stone shall be first chinked as specified in Section 02272 and as shown on the Drawings.

5.6.2 Placement. The Contracting Officer shall visually inspect geotextile rolls, prior to installation, for damage and imperfections. Defective rolls shall be marked and repaired. The geotextile shall be laid smooth so as to minimize tension, stress, folds, wrinkles, or creases. Trimming shall be performed using only an upward cutting hook blade. Uplifted geotextile shall be approved prior to reuse.

5.6.3 Protection. The geotextile shall be protected during installation from binding, clogging, penetrations, tears, or other damage. Damaged geotextile shall be repaired or replaced. Adequate ballast (e.g. sand bags) shall be used to prevent uplift by wind, wave action, or water currents. The geotextile shall not be exposed to sunlight for more than 5 days during installation. Overlying materials shall be deployed such that the geotextile is not shifted, damaged, or placed in tension. During placement, the height of drop of stone shall be no greater than 12 inches above the water surface or 36 inches below the water surface. In no case shall any type of equipment be allowed on the geotextile until at least 1 foot of cover has been placed on the geotextile.

5.6.4 Overlap Seams. Geotextile panels shall be continuously overlapped a minimum of 36 inches. The Contractor has the option of field sewing instead of overlapping.

5.6.5 Sewn Seams. If the Contractor elects to utilize sewn seams instead of overlapping the fabric as specified above, the thread for the sewn seams shall meet the chemical compatibility and ultraviolet light stability requirements for the geotextile and the color shall contrast with the geotextile. Seams shall be continuously sewn using a flat seam with a two-thread chain stitch unless otherwise recommended by the manufacturer. The minimum distance from the geotextile edge to the stitch line nearest to that edge shall be 3-inches unless otherwise recommended by the manufacturer. Seams shall be continuously sewn and tested at a minimum frequency as specified in ASTM D 4884. Seam strength shall meet the minimum requirements specified in Table 1.

5.6.6 Repairs. Damaged or defective geotextile shall be repaired by placing a patch of the same type of geotextile which extends a minimum of 24 inches beyond the edge of the damage or defect. Patches shall be adequately anchored using sandbags or other approved methods recommended by the manufacturer and approved by the Contracting Officer. Geotextile which cannot be repaired shall be replaced at no additional cost.

5.7 Measurement and payment: No separate measurement will be made for geotextile. All payment will be included under the lump sum payment for this contract.

6. GOVERNMENT FURNISHED DISPOSAL AREA:

6.1 The contractor shall use the designated Government-furnished placement sites located behind the constructed stone breakwaters and geotextile tube/breakwater combinations. The contractor will construct stone breakwaters that will be used for the containment of the dredged material, in the areas designated on the contract drawings. The foundation in the areas of the breakwater construction shall be cleared of obstructions. Geotextile fabric will then be placed on the existing subgrade prior to the breakwater construction. The dredged material will be placed no higher than the height of the existing marsh which should be about + 2 MHW. The dredged material placed behind the breakwaters and/or geotextile tubes will slope down to the structures. The Contractor must use a diffuser while placing the dredged material in all placement sites. The material in each site may have to be graded to obtain the height required. Within 7 days after receipt of Notice to Proceed, the Contractor shall furnish his plan for the dredging and disposal operations to the Contracting Officer for review and approval

6.2 As shown on the contract drawings there are four placement areas to be constructed to +2.5 MLLW except where noted on the drawings as flushing ports.

Placement site A - The first section of breakwater to be constructed will be at the northern portion of the island from stations 0+000 to 1+590. This portion of the breakwater will have a layer of geotextile fabric within the structure, since it will be receiving the Back Creek dredged material which is fine-grained. The placement of the dredged material shall start out at the existing marsh elevation (or higher if determined by the Contracting Officer) and maintain that elevation until within 25 feet of the stone structure that will contain the material. At that point the material shall be allowed to slope to its natural angle of repose until it reaches the structure. If there is capacity remaining once the Back Creek channel is dredged, then material from other portions of the dredging may be placed on top. This breakwater generally follows the -4.5-foot MLLW contour so as to require a seven-foot high structure.

One end of the stone breakwater shall be keyed into the land portion of the island and the other end must go around the existing bulkhead. It should be noted that this area was once a hunting lodge with a pier and steel bulkheads. This area has debris scattered in the vicinity. Also geotextile tubes have been placed along the northern area (inshore) and coming off the northwest point of the island (in deep water). Care should be taken when constructing the stone containment area, especially near the remnant bulkheads. Generally, any obstructions should be removed prior to building the breakwater. The stone structure can still be built on top of an obstruction (like a small geotextile tube) if the integrity of the structure is not compromised. If the stone breakwater must be aligned differently to avoid the obstruction then it must still provide an enclosed placement site. Any deviation of the alignment must be approved by the COR or his authorized representative. The breakwater will be placed along the -4.5 MLLW contour and built to a +2.5 MLLW elevation. All stonework must be completed in “placement site A” prior to the placement of dredged material in this site.

Placement site B - The stone breakwater will be constructed in the areas where the existing geotextile tubes have failed as shown on the drawings. These stone breakwaters will bridge the gaps in the line of tubes so that dredged material can be placed in this area. The stone work shall overlap the existing geotextile tubes by 10 feet on each side and be placed as close to the existing tubes as possible without tearing or puncturing the tubes. If the tube is punctured or torn the contractor must immediately fix the tube, replace the tube or extend the stone structure at his own expense. The placement of the dredged material shall start out at the existing marsh elevation and maintain that elevation for 50 feet and then allow the material to slope at its natural angle of repose until it reaches the structure. The material at the foot of the structures (tubes) shall be no higher than +0.5 MLLW. All stonework must be completed in "placement site B" prior to the placement of dredged material in this site.

Placement site C - The stone breakwater will be constructed in the areas where the existing geotextile tubes have failed. These stone breakwaters will bridge the gaps in the line of tubes, so that dredged material can be placed in this area. In "placement site C" there is an existing marsh behind the line of geotextile tubes. This area will only receive sandy material from the Honga River channel and will have to be feathered in using a diffuser and possibly a "Y" valve. As in Placement site B, the stonework will overlap the geotextile tubes by 10 feet on each side and any damage to any exiting tubes will be fixed as discussed in the paragraph for Placement site B. The dredged material will only be placed as high as the surrounding area that is vegetated. All stonework must be completed in "placement site C" prior to the placement of dredged material in this site.

Placement site D - This is the southern-most section of breakwaters and construction will begin where the last geotextile tube ends. The stone structure will continue in a southerly direction from station 0+000 to station 1+790. There may be tree stumps in the area that are remnant of the island which has eroded. These stone structures generally follow the -3.0-foot MLLW contour resulting in an approximate 5.5-foot high structure to be constructed. This stretch of stone structures will contain some areas about 10 feet long and will be 0.5 feet lower to act as flushing ports to allow water to enter the area. The station locations and lengths of the flushing ports are shown on the drawings. The structure will continue southward until the 4000 feet of total structure for sites A, B, C, and D has been built. It is the intention that the structure will pass an area where the island has breached. If the end of the 4000 feet of structure has not passed the breaches, an area along that reach may be left unconstructed in order to place stone in front of the breaches.

The dredged material shall be placed at a height of the existing marsh and continue toward the stone structures for about 100 feet (or as directed by the Contracting Officer) and then allowed to slope naturally to the structures. The dredged material shall be placed no higher than +0.5 MLLW at the toe of the structure. This site is to optimize the + 0.6 to + 1.4 MLLW area. In addition, once grade is established, two dendritic channels about 1-foot deep will be excavated starting at the stone structure and continuing towards the back of the placement site, to act as a tidal gut to provide water to the entire area.

These areas and configurations will be determined by the Contracting Officer or his representative. If additional capacity is needed, placement of the material may continue down the beach area as directed by the Contracting Officer. All stonework must be completed in “placement site D” prior to the placement of dredged material in this site, unless directed otherwise by the Contracting Officer.

6.3 The Contractor shall be responsible for preparing the stone breakwater placement areas and maintaining the integrity of the stone structures throughout the life of the contract. At no time will dredge pipes be permitted to lay across the stone structures, but must come from the land side or be supported by an “A” frame, or equivalent, over the structure. In the event any leaks occur in the dredge pipeline line, the Contractor shall immediately discontinue dredging operations until such leaks in the line, or breaks are remedied at the Contractor's expense.

6.4 The disposal area(s) shall be plainly marked by the Contractor with conspicuous stakes that mark elevations for placement of the material. The material must be placed within the designated areas. Placement site "A" will be filled with the Back Creek material before material is placed into area "B". Placement site “C” can be filled at any time you encounter sandy material. Area “C” will be filled before the project is completed. Site “D” is the last to be filled. The area adjacent to “D” and behind the geotextile tubes may be void of any material. If this is the case that area should be filled before moving into area “D”. If material in any area is too high grading may be required. The Contracting Officer or his representative may request additional material in any given area. The placement will try and maximize the elevation of +0.6 to +1.4 MLLW. Once the correct elevation is obtained in an area within the cell, the pipeline will be moved in a southern direction and the placement process repeated until all material is dredged. Stakes should be placed along the baseline and at the seaward terminus in all placement areas, indicating the location and elevation that material can be placed. This will allow the inspector to judge the height of placement. The natural slope occurring at the terminal end of the newly formed shoreline should produce and area no shallower than +0.5 feet MLLW. If the area becomes shallower than +0.5 feet MLLW grading may be required to obtain that elevation.

6.5 Restoration of Landscape Damage. Any tree, grassed area or other landscape scarred or damaged by the Contractor's equipment shall be restored as nearly as possible to its original condition at the Contractor's expense. The Contracting Officer shall determine the methods of restoration to be used.

7. STONEWORK

PART 1 GENERAL

7.1.1 DESCRIPTION OF WORK

The work covered by this section consists of furnishing all plant, labor, equipment, and materials and performing all operations in connection with the construction of the breakwaters as shown on the Contract Drawings or as directed

by the Contracting Officer in accordance with these Specifications and applicable Drawings.

7.1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C-97 Absorption and Bulk Specific Gravity of Dimension Stone

ASTM D-4992 Evaluation of Rock to be Used for Erosion Control

ASTM D-5519 Particle Size Analysis of Natural and Man-Made Riprap Materials

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 1110-2-2302 Construction with Large Stone

EM 1110-2-1906 Laboratory Soils Testing

MARYLAND DEPARTMENT OF TRANSPORTATION – STATE HIGHWAY ADMINISTRATION

Standard Specifications for Construction and Materials

7.1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with paragraph 16: SUBMITTAL PROCEDURES:

SD-01 Data

Stone Source (GA): Within twenty (20) calendar days after Notice To Proceed (NTP), the Contractor shall submit data as specified in PART 2 Paragraph 7.2.2 “SOURCES OF STONE AND APPROVAL”.

Placement Methods (GA): The Contractor shall submit his proposed method of construction, to include the sequence of stone placement, methods of placement, and equipment to be used during each construction phase, to the Contracting Officer for approval at least 30 calendar days prior to the scheduled start of work, in accordance with paragraph 7.3.2, "PLACEMENT."

Stone Gradations (GA): Gradation test results demonstrating compliance with the requirements of paragraph 7.2.1.3 “Gradations” shall be submitted for review as specified in paragraph 7.3.7.2

Check Surveys (GA): The Contractor shall submit surveys, both field data and plotted cross sections, for each prepared surface for stone placement, and the final stone surface, in accordance with the requirements presented in paragraph 7.3.8, “CHECK SURVEYS,” of this section of the specifications.

SD-18 Records

Quality Control (GA): The Contractor shall establish and maintain quality control (QC) to assure compliance with contract requirements and shall maintain records of his quality control for all stone material inspections, gradation tests, and construction operations required under this section. A copy of these records, as well as records of corrective action taken, shall be furnished to the Government as required in the paragraph 7.3.7 "Quality Control," of this section and paragraph 7 CONTRACTOR QUALITY CONTROL in the Special Clauses section.

SD-13 Certificates

Weigh Scale Certification (FIO):

If an on-site weight scale is used, prior to the use thereof, the Contractor shall be required to submit pertinent details on the location, type, and construction of the scale, including a copy of the certification of the scale's accuracy from the local weights and measures regulation agency.

7.1.4 DEFINITIONS

7.1.4.1 Stone: Reference to stone herein includes all sizes and gradations specified herein unless otherwise stated.

7.1.5 NOT USED

7.1.6 DEMONSTRATION STOCKPILE

Following submittal of the Contractor's Stone Source submittal but prior to the Government's final approval of the stone source, the Contractor shall make arrangements to provide a pre-production demonstration stockpile for each of the stone size gradation for the project. For each gradation, the stockpiles shall be approved by the Government and shall be located at the source of the stone and be shaped in windrow fashion. The armor stone shall be placed in a single layer with one (1) foot of clear space around each stone. The stones placed in the demonstration stockpile shall be representative of the overall quality of each lithology type material produced in the source and shall not consist of the most perfect specimens unless it is reasonable to determine that the source will produce the required amount of stone of the applicable size range with a degree of quality no less than that existent in the demonstration stockpile. The quantity of stone in each demonstration stockpile shall be dependent upon the gradation size range and the total quantity of such size range to be produced for the project.

The following parameters shall apply:

Stone designation	Demonstration Stockpile Quantity
Core Stone	3 Tons
Armor Stone	20 Tons
Chinking Stone	Not required

The stones placed in the stockpile shall have been pre-selected by the Contractor's inspector or supervisor and acceptable stones over 500 pounds in size shall have been noticeably marked with a durable, water proof, spray paint with a coded mark to denote acceptability for a certain size range. The weight of each armor stone unit placed in the demonstration shall also be marked by water proof, spray paint. A stockpile of representative rejected stones marked with a red “X” shall also be maintained at the site as examples of unacceptable materials or shapes.

7.1.6.1 Evaluation of Demonstration Stockpile

The Contractor shall notify the Contracting Officer, or his designated representative (COR), when stockpiles are ready for evaluation. The Contractor and his inspectors shall accompany the COR during the Government's evaluation of the demonstration stockpiles. The Contractor shall be responsible to have individual stones turned as necessary to accommodate the COR's evaluation. The COR shall mark rejected stones with a red X and such stones shall be removed to the reject stockpile or to a crusher if one is available. If more than 10 rejected stones are found within a stockpile or gradation tests results indicate “Failed”, than the entire stockpile shall be rejected by the Government and a replacement stockpile created for re-evaluation. If the replacement stockpile is rejected or results in a gradation test result of “Failed”, the Contractor shall revise and resubmit the Stone Source submittal within seven calendar (7) days and shall create another replacement demonstration stockpile for evaluation. If the third demonstration stockpile for a particular size range at a single source is rejected, the entire source will be rejected for such size range and the second source will be identified in a new Stone Source submittal. The replacement of demonstration stockpiles, supervisors, inspectors, or stone material shall be at no additional cost to the Government and with no change in the time of completion.

7.1.6.2 Approval of Demonstration Stockpiles

At the time the Contracting Officer or his designated representative finds the contents of a demonstration stockpile to be acceptable, through visual examination, the Contractor will be notified within seven (7) calendar days of evaluation of the demonstration stockpile that the source(s) are approved, whereupon the Contractor may proceed with production of stone material for the project provided they are consistent with the demonstration stockpile.

7.1.6.3 Duration of Demonstration Stockpiles

Other than for being shipped as the final quantities of materials to be placed in the project structure, each demonstration stockpile shall remain unchanged at

each source area for each stone range until all other material of that size range represented by the stockpile has been shipped from that source. The demonstration stockpile integrity shall be insured by surrounding the stockpile by yellow caution tape secured on wooden or metal posts driven into the ground.

PART 2 PRODUCTS

7.2.1 STONE

7.2.1.1 General

The stone materials to be furnished shall meet all requirements specified herein. Stone shall consist of fresh, sound, hard, dense, durable rock which shall be separated from bedrock by quarrying. Stone shall also meet all testing criteria specified in this section. Testing criteria is outlined in paragraph 7.2.1.6 herein. The COR shall, at any time during the contract, reject any stone, individually or collectively, not meeting specification requirements at the source, transfer point(s), or job site. Stone material which has been delivered to the project site and is rejected, whether in stockpile or in place in the structure, shall be removed from the project site and replaced at the Contractor's expense. When directed to do so by the COR, rejected stones shall be returned to the stone's source at the Contractor's expense for the purpose of visually showing the inspectors and quarry operators examples of stones which will not be acceptable in the project's structure, in lieu thereof, the Contractor’s inspectors and quarry operators may be brought to the project site at the Contractor's expense for the same purpose.

7.2.1.2 Material Quality

All stone shall be of a quality to insure permanence of the structure during its designed project life in the climate and conditions in which it is to be used. Selected granite, quartzite, gabbro, diabase, dolomite, some dolomitic limestones, limestone, marble, and certain sandstones may be able to meet the requirements of these specifications. All stone utilized shall be free of continuous cracks and fractures and shall not contain deleterious features such splits, spalls, delaminations, disaggreations, dissolvement, shalely parting, or any combination of such features. Stone not meeting these criteria shall be rejected by the COR inspectors or the Contractor’s inspectors and/or quarry operators. Additionally, any stone with features such as stylolites, seams, lenses, and bands of similar or different lithologic material which tend to form planes of weakness along which the stone material breaks or separates shall be rejected. Criteria used by the Contracting Officer for a “fractured” or "cracked" stone is: "any stone which contains one and continuous crack or fracture exposed on two or more faces of the stone; or any stone which contains two or more visible continuous cracks or fractures exposed on any one face of the stone.” A continuous crack or fracture is defined as “an exposed unbroken and uninterrupted visible crack or fracture with a length equal to or greater than one-half of the dimension of the face on which it is exposed .” Evaluation of a crack or fracture along a stone face shall only be based upon length, not width. Inspection for cracks, fractures, seams, defects, and deterioration of each armor stone unit shall be conducted at the discretion of the Contractor. The stone shall also be free of any detrimental geologic features such as, but

not limited, to: clay or shale seams, argillaceous material, weak styolites, schistose seams, detrimental vugs zones of high foliation, and/or other adverse diagenetic features. Inclusion of objectionable quantities of dirt, sand, clay, chert, and rock fines or other deleterious materials shall not be permitted and shall be removed from stockpiles. Additionally stone consisting of calcite, talc, soapstone, chert, or coal in any percentage thereof shall not be permitted for use in any gradation, or any stone required under this specification. If any significant reduction in overall stone quality, gradation mix, or required sizes are observed by the COR to be occurring, the Contractor shall initiate corrective action by direction of the COR including providing individual inspection of each armor stone at no additional cost to the government.

7.2.1.3 Gradation

Stone shall conform to the following gradations:

Armor Stone - Armor Stone shall consist of select quarry stone ranging between 1300 and 3000 pounds. In addition, at least 50% of the individual stones shall weigh at least 2000 pounds.

Chinking Stone – Chinking Stone shall consist of select quarry stone ranging between 25 and 150 pounds.

Core Stone - Core Stone shall consist of graded stone ranging in size from 3-inches to 8-inches.

7.2.1.4 Size and Shape of Stone

Armor stone shall be furnished in blocky and angular shapes, with its greatest dimension not greater than three times its least dimension. The maximum dimension of a stone shall be defined as the maximum distance that can be obtained between two parallel planes by placing and rotating, in all directions, the stone between the planes while having the stone "touch" both planes. The minimum dimension of a stone shall be defined as the minimum distance that can be obtained by the procedures specified above. All flat stones, slabs, boulders and parts of boulders will be rejected. A boulder is here defined as “any rounded stone material not have sharp edges.”

7.2.1.5 NOT USED

7.2.1.6 Evaluation Testing

Testing for the purpose of evaluating the proposed stone source or combination of stone sources shall be made at the Contractor's expense. Stone shall satisfy the test criteria specified in Maryland DOT SHA “Standard Specification for Construction and Material” as “Quality Requirements” in paragraph 901.03 “STONE FOR CHANNELS AND DITCHES” except that stone shall meet the following testing criteria in-lieu of that specified in the aforementioned reference:

Property Test	Method	Test Value
Specific Gravity	ASTM C-97	2.65 minimum

7.2.2 SOURCES OF STONE AND APPROVAL

The Contractor may utilize one or more stone sources (quarries) during the period of this contract; however, each quarry must be identified in a Stone Source submittal. The written submittal shall include such information as quarry location, areas of the quarry producing stone, lithology, and other data including laboratory test records for each lithology identified. The written submittal shall also include each lithology proposed as source material to be used in stone production, QC/QA armor and core stone practices, total daily production rates for each class of stone material produced for this project, a description of armor stone and core stone production method which shall include all equipment used in this production. All testing required, for determining stone quality shall be at the Contractor’s expense. After Government receipt of the Stone source submittal but before stone placement, the quarry shall also be subsequently inspected by the Contracting Officer, or his designated representative, to verify the presence of material that meets all requirements specified herein.

7.2.3 STONE APPROVAL

The acceptability and approval of the stone shall be determined from the following: test records, stone source submittal(s), and examination of the quarry by the COR. All testing required, for determining stone acceptability, shall be at the Contractor’s expense and shall have been performed within the last four (4) years. Testing procedures and criteria are those specified in paragraph 2.1.6 “Evaluation Testing”. Approval of any source of stone shall not be construed as approval of all of the stone produced from that source or bench. All required testing shall be performed by an independent and Government approved lab. All stone shall will be subject to Government QA inspection during loading at the source, at intermediate transfer points and at the site of work prior to placement. The right is reserved to reject certain localized areas, benches, strata, or channels within the approved source when in the opinion of the Contracting Officer, the stone is disintegrated, badly weathered, contains incipient planes of weakness or hidden joints/fractures, or is otherwise unsatisfactory for use in the work as specified herein. The Government also reserves the to collect and test stone sample from any production point in an approved source without the consent of the quarry operators.

7.2.4 STONE NOT MEETING THE SPECIFICATIONS

If, during the progress of the work, it is found that the stone being furnished and/or placed by the Contractor does not fully meet all the requirements of the specifications, the Contractor shall be required to furnish other stone that meets the requirements of these specifications. Any stone rejected at the site of the work as not meeting the requirements of these specifications for quality, condition, size, gradation or otherwise shall be removed from the site by and at the expense of the Contractor, and stone meeting the requirements of the specification shall be furnished and/or placed by the Contractor at no additional cost to the Government. The Contractor shall remove and dispose of all rejected stone in a manner approved by the Contracting Officer.

7.2.4.1 Stone Breakage

Stones which are broken during shipment to the work site or during placement shall be re-weighed and may be rejected if the new weight of the broken unit does not meet gradation requirements. Stones broken in placement shall be removed from the structure and returned to the stockpile area to accomplish re-weighing.

7.2.5 NOT USED

7.2.6 NOT USED

7.2.7 QUALITY ASSURANCE

During the contract period, both prior to and after the materials are delivered to the job site, visual QA inspection and measurements records of all stones produced for this project shall be required. If the COR, during the QA inspection, finds that the stone quality, gradation or weights of the stone being furnished are not as specified or are questionable, re-sampling and re-testing by the Contractor may be required, at no additional cost to the Government. Sampling of the delivered stone for testing and the manner in which the testing is to be performed shall be as directed by the COR. This additional sampling and testing shall be performed at the Contractor's expense.

PART 3 EXECUTION

7.3.1 NOT USED

7.3.2 PLACEMENT

7.3.2.1 Method

Prior to initiation of any construction activities under this contract, the Contractor shall submit in duplicate to the Contracting Officer for approval, his proposed method for placing the stone materials to meet the grades, tolerances, and conditions specified herein. This submittal shall include, but not be limited to, a description of the equipment proposed for use in hauling, placing, and positioning the stone in place, as well as the method of placement

and positioning of stone. Approval of this submittal by the Contracting Officer will not relieve the Contractor of achieving a structure constructed to the grades, tolerances, and conditions specified. If, in the opinion of the Contracting Officer, the Contractor is not achieving the required results from his placement operations, any and all adjustments in the Contractor's operations shall be made as deemed necessary as directed or approved by the Contracting Officer.

7.3.2.2 Foundation Preparation

Prior to the placement of stone materials or geotextile in any area of work, all debris shall be cleared from the area by the Contractor as directed by the Contracting Officer and disposed of in an approved manner.

7.3.2.3 Foundation Conditions

Foundation conditions are unknown. It should be expected that some settlement and displacement of the foundation (mud-waving) may occur during construction and should be taken into account in determining the total volume of stone required. No additional payment will be made for additional stone required due to settlement or displacement.

7.3.2.4 Sequence of Stone Placement

Unless otherwise approved in writing by the Contracting Officer, placement of armor toe stone at any given section shall be accomplished before any other stone is placed in the same section (location).

7.3.3 CORE STONE

After the geotextile is placed in accordance with the provisions of paragraph 5 of this section, "Geotextile for Stonework", core stone shall be placed to the lines and grades indicated on the drawings. Core stone in place shall be a reasonably well graded mass with minimum practicable void space. Placing the material by dumping or by other such methods which tend to segregate particle sizes will not be permitted. Compaction of the core stone shall be accomplished by the controlled use of the hauling and spreading equipment or by other acceptable means approved by the Contracting Officer. A tolerance of plus 3-inches measured perpendicular to the exterior surface of the core stone from the lines and grades shown on the Drawings will be permitted except that the extreme of such tolerance shall not be continuous over an area greater than 100 square feet. No minus tolerance will be permitted.

7.3.4 ARMOR STONE

Armor stone shall be placed on completed sections of Core Stone, or directly on the geotextile as indicated on the contract drawings. Armor stone shall be placed in a timely manner to protect the geotextile and other stone layers. Armor Stone shall be carefully placed to ensure proper positioning and contact with adjacent stones. Armor stones shall be individually placed and shall not be dropped or tipped into position, but shall be placed piece by piece into the structure to achieve a minimum "three-point support" and be stable to the lines

and grades shown on the Drawings. Placement by means other than by individual stone placement may only accomplished with specific approval by the Contracting Officer. Such approval will only be given upon demonstration by the Contractor that the alternate method proposed will produce a stable structure with "three-point support" as described herein. "Three point support" requires contact with at least three separate adjacent stones, not to include underlying stones. Individual stones shall be carefully sorted, chosen, and placed (according to their dimensions) to meet the required grades and tolerances. Placement shall be controlled to avoid clustered placement of weights in the lower portion of the permitted range. The long or intermediate axis of the stone shall be placed perpendicular to the structure face. The top of the finished armor stone layer shall be reasonably smooth with no abrupt changes or discontinuities between the exposed surfaces of adjacent stones. A tolerance of plus 9-inches or minus 2-inches measured perpendicular to the exterior surface of the stonework from the lines and grades shown on the Drawings shall be permitted except that the extreme of such tolerance shall not be continuous over an area greater than 100 square feet. The intention is that the breakwaters will be built to the required elevations, slopes, grades and tolerances and that the outer surface be even and present a generally neat appearance. Placed material not meeting these limits shall be removed and replaced as directed by the Contracting Officer.

7.3.5 CHINKING STONE

Chinking stone shall be placed on the landward side of the structure as shown on the contract drawings. Following placement of the chinking stone, a layer of geotextile shall be placed in accordance with paragraph 5 of this section, “Geotextile for Stonework”. A minimum of depth of 8 inches of chinking stone will be placed over the geotextile as shown on the contract drawings.

Following the placement of armor stone, and overlying geotextile on the landward side of the structure, chinking stone shall be placed as shown on the contract drawings.

7.3.6 TEMPORARY PROTECTION

If the Contractor anticipates that construction of the stonework will be interrupted for more than four (4) continuous days including holidays and weekends, he shall provide, at his expense, such temporary stone protection necessary to protect all stonework that has been placed. Adequate temporary protection shall also be placed in the event potential damage is anticipated from a predicted storm.

7.3.7 QUALITY CONTROL

7.3.7.1 General

The Contractor shall establish and maintain quality control to assure compliance with contract requirements and shall maintain records of his quality control for all construction operations required under this section. A copy of these records, as well as records of corrective action taken, shall be furnished to the Government as required in paragraph 7 CONTRACTOR QUALITY CONTROL in the Special Clauses section. The Contractor shall provide all personnel, plant,

equipment, and materials necessary to accomplish the testing required to ensure the material used is within the specified limits and is placed in accordance with these specifications. Reports of all tests performed shall be furnished the Contracting Officer in duplicate. Reports will show all pertinent computations in arriving at the final results.

7.3.7.2 Core Stone

The gradation of the core stone shall be checked by the Contractor by the performance of sieve analyses, the results of which shall be furnished the Contracting Officer prior to the delivery of the material to the site of placement. The sieve analysis shall be performed in accordance with Corps of Engineers EM 1110-2-1906. A minimum of two (2) tests shall be performed on representative samples.

7.3.7.3 Gradation Testing

All project stone shall conform to gradations given in Part 2 of this Section. The Contractor shall test armor stone for gradation compliance before placement The right is reserved to require additional confirmatory gradation testing when in the opinion of the Contracting Officer, that shipments, stockpiles, or placed sections stone do not meet gradation requirements. A minimum of two tests on armor stone shall be preformed on representative material in the stone source. The first gradation test shall be completed on the demonstration armor stone stockpile and shall be completed under the COR’s supervision. No stone shall be delivered to the project site until all sampling, weighting and measuring have been completed and gradation tests results have been approved by the COR. The second gradation will be completed prior to mid-point of the project total volume of armor stone (weight) shipped to the project site. The Contractor shall give the COR 7 days notice prior to conducting the second gradation test.

7.3.7.3.1 Gradation Test Method:

Gradation testing for the large stone will conform to the methods prescribed in ASTM D-5519, “Test Method C”. The Contractor shall test an adequate number of stone such that the addition or subtraction of the largest in the test does not alter the total weight of all stone tested by more than 3.0 percent. Particles finer than the smallest mass of importance need not be weighed individually. Any other deviation from the “Test Method C” must be approved by the COR in advance of the test. The Contractor shall report test results as specified in ASTM D-5519 and clearly stamp or mark the first page as either “Passed” or “Failed”. The Contractor shall provide standard-make scales so that the weight of each stone in the gradation sample can be recorded.

7.3.7.3.2 Gradation Test Approval:

If a particular gradation test is given a result of “Failed”, the Contractor may conducted a second gradation test on a representative sample from the same shipment, stockpile, or placed section. If the second gradation test is given a result of “Passed” and the addition of both the first and second test data is also given a “Passed”, the stone gradation tested will be deemed acceptable. If the second gradation test is given a result of “Failed”, the shipment,

stockpile, or section shall be resorted/regraded to the specified gradation and retested by the Contractor. Stone failing gradation testing and not resorted/regraded by the Contractor shall be treated as rejected stone and subject to all requirements of 7.2.4 “STONE NOT MEETING THE SPECIFICATIONS”. All additional confirmatory gradation testing shall be at the contractors expense.

7.3.7.4 Chinking Stone

Formal gradation of chinking stone will not be required, however, the contractor shall submit quarry records indicating that material being supplied is within the weight limits specified herein.

7.3.8 CHECK SURVEYS

Surveys made by the Contractor will be required of the existing on the prepared subgrade, and on each layer of material placed for determining that the materials are acceptably placed in the work. The Contractor shall make checks as the work progresses to verify lines, grades, and thickness established on completed work. If a delay in the progress of work occurs, additional surveys may be required at the end of the last placement area prior to re-starting placement operations. At least one (1) check survey, as specified below, shall be made by the Contractor for each 50 foot section immediately before and immediately after placement of the first layer of stone material, and as soon as practicable after completion of placement of each type of material. A copy of the record of the check survey shall be provided the Contracting Officer no later than the next work day following the survey. Following placement of each type of material, the cross section of the finished work shall be approved by the Contracting Officer or his authorized representative prior to placement of subsequent layers. Approval of cross sections shall not constitute final acceptance. Cross sections shall be taken by the Contractor on lines a maximum of fifty (50) feet apart. Cross section readings shall be made and recorded at five (5) foot intervals and at breaks along the lines. Other cross section spacings and reading intervals may be used, however, if approved by the Contracting Officer. Additional elevations shall also be taken as the Contracting Officer may deem necessary or advisable. The surveys shall be conducted in the presence of the Contracting Officer's authorized representative unless otherwise waived. Elevations above the water surface shall be determined by the use of a leveling instrument and rod having a base of twelve (12) inches in diameter. Other means, if approved by the Contracting Officer, may also be used. Below the water line, a lead line method may be used. If this method is used, each survey will consist of soundings taken either by means of a sounding pole or a sounding basket weighing 8.5 pounds, each of which has a base measuring twelve (12) inches in diameter.

7.3.9 MEASUREMENT AND PAYMENT

7.3.9.1 General

No separate measurement and payment will be made for any work included in this section. All payment will be included under the lump sum payment for this contract.

8. PIPELINE RIGHT OF WAYS: The pipeline right of ways for Barren Island will be determined by the U.S. Fish and Wildlife Service Attn: Mr. John Gill (410) 228-2692 Ext.118. Since Barren Island is part of the Blackwater Wildlife Refuge, care must be taken while placing and moving pipelines and any other piece of equipment needed to perform the job. Approval from the Fish and Wildlife Service needs to be cleared before any action on the Island

The pipeline right of way for dredging Back Creek is Government furnished and shown on the plans. The contractor must contact Robert Tenanty, of Dorchester County, at (410) 228-2920, to verify the location of the pipeline right-of-way. The pipeline will have to be placed over the road at Hoopers Island and a ramp provided to insure the integrity of the pipeline. Sign warning of the ramp must be placed about 200 feet before reaching the ramp. The signs must warn of the ramp from both approaches. Letter size must meet Maryland Department of Transportation requirements for size. The properties that are allowing the pipeline to traverse must be restored to pre-construction conditions after removal of the pipelines. However the Contractor is not restricted to the right-of-ways shown on the contract drawing(s). In those cases where the Contractor routes a pipeline outside of the Government furnished right-of-way or disposal area property, he shall obtain all easements, permits, and right-of-ways at his own expense.

8.1 Prevention of Landscape Defacement within Government Furnished Pipeline Right-of-Ways. Unless otherwise noted on the contract drawing(s), the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without the authority of the Contracting Officer or his authorized representative. Monuments and markers shall be protected before construction operations commence and until contract completion.

8.2 Restoration of Landscape Damage within Government Furnished Pipeline Rights-of-Ways. Any tree, grassed area or other landscape scarred or damaged by the Contractor's equipment shall be restored as nearly as possible to its original condition at the Contractor's expense. The Contracting Officer shall determine the methods of restoration to be used.

9 WETLAND PLANTS: At the conclusion of dredging, the material will be allowed to settle and in the spring it will be planted by others. The contractor will provide 150,000 plants to created the wetlands in the placement areas. The breakdown of plant species is as follows:

100,000	Saltmarsh Cordgrass (Spartina alterniflora)
30,000	Saltmeadow Cordgrass (Spartina patens)
10,000	Saltgrass (Distichlis spicata)
10,000	Needlerush (Juncus roemerianus)

The contractor shall be responsible for providing the plants and fertilizer to the site for construction of the wetland.

9.1 All S. patens will be living; potted, multiple-stemmed sprigs about 9 inches in height, to be planted 18 inches on center. The plants will be fertilized with a slow-release all purpose fertilizer. The S. alterniflora plants will be potted multiple-stemmed sprigs about 1 foot in height, to be

planted 18 inches on center. These plants will also be fertilized with a slow-release, all purpose fertilizer. The Distichlis and Juncus should be well rooted plugs, 3-6 months old and no smaller than 6 inches.

9.2 The contractor will provide all the plants and the fertilizer to the site to be planted after dredging and placement has occurred. The U.S. Fish and Wildlife Service (FWS) and the National Aquarium will be responsible for planting. The contractor shall be responsible for coordination with the FWS to determine the date and location for the delivery of the plants. One representative of the contractor or subcontractor will be on site on the first day of planting to assure the arrival of all plants and fertilizer.

9.3 Potential local nurseries that may supply the plant material and do the plantings are:

Dr. Ed Garbish
Environmental Concerns
P.O. Box P
St. Michaels, Maryland 21663
(410) 745-9620

Mr. Griff Evans
ER&M
303 Alleghaney Ave.
Towson, Maryland 21204
(410) 337- 4899

Dr. Stan Kolar
Kolar Environmental Services
5200 West Heaps Rd.
Pylesville, Maryland 21132
(410) 836-0500

Mr. Don Knezick
Pinelands Nursery
323 Island Rd
Columbus, New Jersey 08022
(609) 291-9486

The Contractor is not obligated to use any of these nurseries and can use any qualified nursery of their own choosing

10. NONCOMPLIANCE: The Contracting Officer or his authorized representative will notify the Contractor in writing of any noncompliance with the foregoing provisions. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. Within 24 hours after the receipt of such notice, the Contractor shall mail, or personally deliver to the Contracting Officer or his authorized representative, a complete proposal of the prompt correction of the noncompliance. The Contracting Officer or his authorized representative will review the proposal and return it to the Contractor approved, subject to such changes or conditions as he finds necessary to assure correction of noncompliance. Immediately upon receipt of such approval, the Contractor shall begin the corrective work and shall carry it to completion. If the Contractor fails or refuses to submit his proposal or to proceed with the corrective work, the Contracting Officer or his authorized representative may suspend all or any part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such suspension shall be made the subject of a claim for extension of time nor for excess costs or damages by the Contractor. If he so elects, the Contracting Officer or his authorized representative may cause the corrective work to be accomplished by others, in which event the cost thereof shall be chargeable against any monies otherwise due the Contractor from the Government.

11. INSPECTION AND TESTING:

11.l Inspection: The work will be conducted under the general direction of the District Engineer and will be subject to inspection by his appointed inspector(s) to insure strict compliance with the specifications. The Government inspector(s) will direct the maintenance of the gages, ranges, location marks, and limit marks in proper order. Portable lighting shall be provided upon request of the Government inspector(s) for more detailed inspection of potential trouble areas.

11.2 The Government inspector(s) will direct suspension of operations at any unit of work where the Contractor upon request does not correct a safety hazard that is so grave as to endanger life, limb, or property or cause serious damage to the work. This includes, but is not limited to, a failure on the part of the Contractor (1) to have a full-time quality control person present and fully alert and awake on the disposal area at all times pumping operations are in progress or (2) provide and maintain the required marine band radio for use by Government inspector(s) at all times while pumping operations are in progress and/or (3) provide and maintain the approved lighting on the disposal area for safe night operations are all basis for Government inspector direct suspension of work.

12. OVERDEPTH AND SIDE SLOPES:

12.1 Overdepth: To cover inaccuracies of the dredging process, material actually removed from within the specific areas to be dredged to a depth of not more than 2-feet below the required depth, except Honga River Federal channel Sta. –0+100 to 4+000 which shall be 1-foot, will be estimated and paid for at the contract price.

12.2 Side slopes: Material actually removed, within limits approved by the Contracting Officer, to provide for final side slopes not flatter than 1 vertical on 3 horizontal, but not in excess of the amount originally lying above this limiting side slope will be estimated and paid for, whether dredged in original position or by dredging space below the pay slope plane at the bottom of the slope for upslope material capable of falling into the cut. In computing the limiting amount of sideslope dredging, an over-depth of 2-feet, except Honga River Federal channel Sta. –0+100 to 4+000 which has 1-foot overdepth, measured vertically will be used.

12.3 Excessive dredging: Material taken from beyond the limits as extended in the provisions of paragraphs 12.1 and 12.2 above will be deducted from the total amount dredged as excessive overdepth dredging, or excessive sideslope dredging for which payment will not be made. Nothing herein shall be construed to prevent payment for the removal of shoals performed in accordance with the applicable provisions of the Special Clauses FINAL EXAMINATION AND ACCEPTANCE or SHOALING.

13. MEASUREMENT AND PAYMENT:

13.1 Mobilization and Demobilization: Mobilization and demobilization shall include all costs in connection with the development and maintenance of

the placement areas including but not limited to: obtaining the necessary permits and approvals for the work specified in accordance with the Contract Clause PERMITS AND RESPONSIBILITIES; full reimbursement for the premiums actually paid for performance and payment bonds, moving the Contractor's dredging plant and equipment to the site; initial laying of pipelines; maintenance of the placement areas, and the removal of all dredging plant, equipment, fencing and pipelines from the site upon completion of the work. Payment shall be made in accordance with Item No. 0001, "Mobilization and Demobilization" of the Unit Price Schedule which shall be full compensation for the work performed.

13.2 Dredging: The total amount of material removed and to be paid for under the contract, will be measured by the cubic yard in place by computing the volume between the bottom surface shown by soundings of the last survey made before dredging and the bottom surface shown by the soundings of a survey made as soon as practicable after the entire work specified has been completed and included within the limits of the overdepth and side slopes described in the Technical Provision paragraph OVERDEPTH AND SIDE SLOPES less any deductions that may be required for misplaced material described in the Technical Provision paragraph MISPLACED MATERIAL. Payment shall be made in accordance with Item No. 0003, "Maintenance Dredging" of the Unit Price Schedule which will be full compensation for the work performed.

13.3 Stonework: Stonework will not be measured for payment. Payment for stonework required for construction of all stone structures including all incidentals; demolition and removal of debris if applicable; all geotextile and survey work shall be included in the Lump Sum Price for Bid item No. 0002. The total material to be paid for under the contract will be measured by the additional linear foot, in place.

13.4 Wetland Plants: Wetland plants shall include all costs associated with ordering, obtaining, and delivery of 150,000 plants and the required fertilizer, to create a wetland. The species and quantities shall conform to the requirements specified in paragraph 9 of this section. Substitutions shall not be allowed without prior approval from the Contracting Officer. Payment shall be made in accordance with Item No. 0004, "Wetland Plants” of the Unit Price Schedule which will be full compensation for the work performed.

13.5 The maps and/or drawings already prepared are believed to represent accurately conditions existing on the date shown on the contract drawing(s). Determination of quantities removed and the deductions made therefrom to determine quantities by place measurement to be paid in the area specified, after having once been made, will not be reopened except on evidence of collusion, fraud, or obvious error.

13.6 Monthly partial payments will be based on approximate quantities determined by soundings or sweepings taken behind the dredge and/or approximate quantities reported in the Daily Reports of Operations or footage of stonework completed.

13.7 Should the Contractor in conjunction with work under this contract perform dredging for third parties adjacent to the specified area to be dredged,

payment will be made by the Government only for material removed from the contract area within a vertical plane at the contract unit lines at the location work is performed for such third parties.

14. WORK IN THE VICINITY OF STRUCTURES AND UTILITY CROSSINGS:

14.1 The Contractor shall exercise caution when working in the vicinity of structures and utility crossings or adjacent to the channel or disposal areas. Repair of any damage resulting from excessive or improper excavation in the bottom or side slopes of the channel shall be the responsibility of the Contractor. Where dredging to the required elevation might endanger any structure, the Contracting Officer or his authorized representative may reduce the required excavation in the vicinity of such structure.

14.2 The Contractor shall provide at least project channel dimensions over all utility crossings. The Contractor shall submit for approval by the Contracting Officer or his authorized representative a detailed plan of operation at each pipeline or utility crossing where construction surveys indicated project channel does not exist. The plan shall contain emergency measures to be taken in the event of an accident. The Contractor shall notify the owners of pipelines or utilities at least three calendar days prior to operating within 150 feet of a pipeline or utility. The Government will not be responsible for any damage to structure or utilities due to the Contractor's deviation from the approved plan.

14.3 Any unidentified pipelines or structures which may be found within the limits of work shall not be disturbed nor shall dredging or the disposal of dredged material be performed at these locations unless, and until, approved by the Contracting Officer.

15. QUALITY CONTROL:

15.1 The Contractor shall establish a Quality Control system to assure compliance with contract requirements and shall maintain records of his quality control for all construction and dredging operations as required in the QUALITY CONTROL paragraphs in the Special Clauses.

16. SUBMITTAL PROCEDURES

PART 1 - GENERAL

16.1.1 SUBMITTAL IDENTIFICATION

Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction Submittals

SD-03 Product Data

SD-05 Design Data

SD-06 Test Reports

SD-07 Certificates

SD-11 Closeout Submittals

16.1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

16.1.2.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

16.1.2.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above. Submittal Register ENG FORM 4288, column labeled "Reviewer", this column is blank and is understood that the reviewer is "AR" (Area Office).

16.1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work.
After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

16.1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

16.1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

16.3.1 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

16.3.2 SUBMITTAL REGISTER

At the end of this section is one set of ENG Form 4288 listing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Contractor will also be given the submittal register files, containing the computerized ENG Form 4288 and instructions on the use of the files. These submittal register files will be furnished on a separate diskette. Columns "c" through "f" have been completed by the Government; the Contractor shall complete columns "a" and "g" through "i" and submit the forms (hard copy plus associated electronic file) to the Contracting Officer for approval within 30 calendar days after Notice to Proceed. The Contractor shall keep this diskette up-to-date and shall submit it to the Government together with the monthly payment request. The approved submittal register will become the scheduling document and will be used to control submittals throughout the life of the contract. The submittal register and the progress schedules shall be coordinated.

16.3.3 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

16.3.4 TRANSMITTAL FORM (ENG FORM 4025)

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

16.3.5 SUBMITTAL PROCEDURE

Six (6) copies of submittals shall be made as follows:

16.3.5.1 Procedures

In the signature block provided on ENG Form 4025 the Contractor certifies that each item has been reviewed in detail and is correct and is in strict conformance with the contract drawings and specifications unless noted otherwise. The accuracy and completeness of submittals is the responsibility of the Contractor. Any costs due to resubmittal of documents caused by inaccuracy, lack of coordination, and/or checking shall be the responsibility of the Contractor. This shall include the handling and review time on the part of the Government. Each variation from the contract specifications and drawings shall be noted on the form; and, attached to the form, the Contractor shall set forth, in writing, the reason for and description of such variations. If these requirements are not met, the submittal may be returned for corrective action.

16.3.5.2 Responsibility

The Contractor is responsible for the total management of his work. The quantities, adequacy and accuracy of information contained in the submittals are the responsibility of the Contractor. Approval actions taken by the Government will not in any way relieve the Contractor of his quality control requirements.

16.3.5.3 Additional Requirements

The above is in addition to the requirements set forth in Contract Clause entitled "Specifications and Drawings for Construction". (ER 415-1-10)

16.3.5.4 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

16.3.6 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that

each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

16.3.7 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Four (4) copies of the submittal will be retained by the Contracting Officer and two (2) copies of the submittal will be returned to the Contractor.

16.3.8 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

16.3.9 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR

(Firm Name)

_____ Approved

_____ Approved with corrections as noted on submittal data and/or attached sheet(s).

SIGNATURE: _____

TITLE: _____

DATE: _____

16.3.10 CERTIFICATES OF COMPLIANCE: (MAY 1969)

Any Certificate required for demonstrating proof of compliance of materials with specification requirements shall be executed in four (4) copies. Each certificate shall be signed by an official authorized to certify in behalf on the manufacturing company and shall contain the name and address of the

Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet the specific requirements. (CENAB)

End of Section

SUBMITTAL REGISTER
(ER 415-1-10)

CONTRACT NO.

TITLE AND LOCATION
BARREN ISLAND

CONTRACTOR

SPECIFICATION SECTION
Section 2. Para 5

ACTIVITY NO a.	TRANS-MITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL										CLASSI-FICATION		REVIEWER r.	CONTRACTOR SCHEDULE DATES			CONTRACTOR ACTION			GOVERNMENT ACTION		
					DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	INFORMATION ONLY p.	GOVERNMENT APPROVED q.		SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CODE v.	DATE w.	SUBMIT TO GOVERN-MENT x.	CODE y.	DATE z.	REMARKS aa.
			5.5.1	CERTIFICATE OF COMPLIAMCE							X				X		AR									
			5.5.1	MATAEIAL SAMPLES								X				X	AR									
			5.6	INSTALLATION PLAN		X	X									X	AR/ ED									
			5.6.6	DEFECT REPAIR PLAN		X	X									X	AR/ ED									

SUBMITTAL REGISTER
(ER 415-1-10)

CONTRACT NO.

TITLE AND LOCATION
BARREN ISLAND

CONTRACTOR

SPECIFICATION SECTION
Section 2, Para.7

ACTIVITY NO a.	TRANS-MITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	CLASSIFICATION: GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	CONTRACTOR SCHEDULE DATES: APPROVAL NEEDED BY t.	CONTRACTOR SCHEDULE DATES: MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	CONTRACTOR ACTION: DATE w.	CONTRACTOR ACTION: SUBMIT TO GOVERN-MENT x.	GOVERNMENT ACTION: CODE y.	GOVERNMENT ACTION: DATE z.	REMARKS aa.
			7.1.3	Stone Source	X		X			X						X	ED									
			7.1.3	Placement Method		X	X		X							X	AR/ ED									
			7.1.3	Stone Gradations	X				X				X			X	AR/ ED									
			7.1.3	Check Surveys	X	X										X	AR									
			7.1.3	Quality Control Records						X						X	AR/ ED									
			7.1.3	Weigh Scale Certification							X				X		AR									

TRANSMITTAL OF SHOPDRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE (*Read instructions on page two prior to initiating this form)*	DATE: Mo / Day / Yr / /	TRANSMITTAL NO --

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (*This section will be initiated by the contractor*)

TO:	**FROM:**	**CONTRACT NO .** DAC	**CHECK ONE:** ☐ **THIS IS A NEW SUBMITTAL** ☐ **THIS IS A RESUBMITTAL OF TRANSMITTAL**
SPECIFICATION SEC NO.(Cover only one section with each transmittal)	**PROJECT TITLE AND LOCATION**		

ITEM NO. a.	DESCRIPTION OF ITEM SUBMITTED (Type size, model number/etc.) b.	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. (See instruction no. 8) c.	NO. OF COPIES d.	CONTRACT DOCUMENT SPEC. PARA NO. e.	REFERENCE DRAWING SHEET NO. f.	FOR CONTR-ACTOR USE CODE g.	VARIATION (See instruction No. 6) h.	FOR CE USE CODE i.

REMARKS	I certify that the above submitted items have been reviewed in detail and are correct and in strict compliance with the contract drawings and specifications except as other wise stated. NAME AND SIGNATURE OF THE CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE OF APPROVING AUTHORITY	DATE

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required numbers of copies.

2. Each transmittal shall be numbered consecutively in the space provided for “Transmittal No.”. This number in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.

3. The “Item No.” will be the same “Item No.” as indicated on ENG FORM 4288 for each entry on this form.

4. Submittals requiring expeditious handling will be submitted under a separate form.

5. Separate transmittal form will be used for submittals under separate sections of the specifications.

6. A check shall be placed in the “Variation” column when a submittal is not in accordance with the plans and specifications -- also a written statement to that effect shall be included in the space provided for “Remarks”.

7. Form is self transmitting, letter of transmittal is not required.

8. When a sample of a material or Manufacturer’s Certificate of Compliance is transmitted, indicate “Sample” or “Certificate” in column c, Section I

9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column I to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated in Section I, Column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A -- Approved as submitted
B -- Approved, except as noted on drawings.
C -- Approved except as noted on drawings. Refer to attached sheet resubmission required.
D -- Will be returned by separate correspondence.
E -- Disapproved (See Attached)
F -- Receipt acknowledged
FX -- Receipt acknowledged, does not comply as noted with contract requirements
G -- Other (*Specify)*

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

Reverse of ENG Form 4025

ATTACHMENT 1

Daily Quality Control Report

DAILY QUALITY CONTROL REPORT

Contract No.: _____ **Date:** _____ **Rpt. No.:** _____

Project Title & Location:

Weather: Clear P. Cloudy Cloudy Rainfall in (% of workday)

Temperature during workday: High degrees F. Low degrees F.

1. WORK PERFORMED BY CONTRACTORS/SUBCONTRACTOR(S)

	No. of Workers	Crafts	Hrs	Description of Work

2. OPERATING EQUIPMENT DATA (Not hand tools)

Equipment	Date of arrival/ departure	Owned or Rented	Hours Used	Hours Idle	Hours of Rep./Main

3. WORK PERFORMED TODAY: (Indicate location and description of work performed by prime and/or subcontractors).

Rpt. No.

4. QUALITY CONTROL INSPECTIONS & RESULTS (Includes a description of prepatory, initial, and/or follow-up inspections or meetings; check of subcontractors work and materials delivered to site compared to submittals and/or specifications; comments on proper storage of materials; included comments on corrective actions to be taken):

5. QUALITY CONTROL TESTING AND RESULTS (Comment on tests and attach test reports):

6. DAILY SAFETY INSPECTIONS (Include comments on new hazards to be added to Hazard Analysis and corrective action of any safety issues):

7. REMARKS (Include conversations with or instructions from the Government representatives; delays of any kind that are impacting the job; conflicts in the contract documents; comments on change orders; environmental considerations; etc.):

8. CONTRACTOR'S VERIFICATION: I certify that to the best of my knowledge the above report is complete and correct. All material, equipment used, and work performed during this reporting period is in compliance with the contract plans and specifications except as noted above.

_____

Contractor Quality Control Officer

ATTACHMENT 2

Daily Report of Operations

DAILY REPORT OF OPERATIONS

CONTRACT NO. | DATE | RCS ENGKW-37 (Feeder)

DREDGE | CONTRACTOR

LOCATION OF WORK (Range, Stationing, Longitudinal position) | CHARACTER OF WORK ( ) Maintenance ( ) New

DISPOSAL AREA OR REHANDLING BASIN | LENGTH OF DISCHARGE PIPELINE: Total Length Ft. Pontoon Ft. Shore Ft. Submerged Ft.

CHARACTER OF MATERIAL AND PERCENTAGE OF EACH
Gravel Sand Clay Mud Silt Hardpan Stone Others

AVERAGE DEPTH (Feet and Tenths) Before Dredging After Dredging Payment Depth | WEATHER

VELOCITY OF DISCHARGE Feet Per Second | AVERAGE VACUUM Inches | AVERAGE DISCHARGE PRESSURE Lbs. | IN PLACE DENSITY G/L

DENSITY OF RIVER WATER | DENSITY OF WATER DISCHARGING OVER SLUICE WEIR | HEIGHT OF DISCHARGE OVER SLUICE WEIR

NUMBER OF MEN | MAN HOURS | MAN HOURS TO DATE

WORK PERFORMED

ITEM	UNIT	AMOUNT GROSS	AMOUNT NET
Av. width of cut	Feet		
Area dredged	Sq.Ft.		
Distance advanced this period	Feet		
Distance advanced previously	Feet		
Distance advanced to date	Feet		
Scows loaded	Number		
Av. load per scow	Cu.Yds.		
Amt. dredged pumping hr.	Cu.Yds.		
Amt. dredged this period	Cu.Yds.		
Amt. dredged previously	Cu.Yds.		
Total amt. dredged to date	Cu.Yds.		
Av. pump speed	R.P.M.		
Av. discharge lift	Feet		

ATTENDANT PLANT

ITEM	NAME	HOURS
Tugboat		
Tugboat		
Launch		
Barges		
Barges		
Scows		
Derrick		

COMMODITIES CONSUMED

ITEM	UNIT	QUANTITY
Fuel oil	Gals.	
Lubricants	Gals.	
Lubricants	Pounds	
Water	Gals.	

DISTRIBUTION OF TIME

EFFECTIVE WORKING TIME	HOURS	MINUTES
Dredging		
Percentage of total time		
NON-EFFECTIVE TIME		
Handling pipe lines		
Handling swinging lines		
Clearing pump and pipe line		
Clearing cutter or suction head		
Taking fuel and supplies		
Changing location of plant on job		
Loss due to opposing natural elements		
Loss due to passing vessels		
Minor operating repairs		
Waiting for attendant plant		
Preparations		
Transferring plant between works		
Lay time off shift		
Sundays and Holidays		
Waiting for scows		
Fire and boat drills		
Miscellaneous (Explain in remarks)		
Total Non-effective Time		
Percentage of Total Time		
LOST TIME (Not chargeable to cost of work)		
Repair time (8 consecutive hours or more)		
Collisions		
Out of commission		
Miscellaneous (Explain in remarks)		
Total Lost Time		
Percentage of total time		
TOTAL TIME IN PERIOD		

No. of Supervisory Inspections: By field personnel By office personnel

REMARKS (Attach additional sheet, if necessary)

(over)

BUCKET OR DIPPER DREDGE (only)				
SCOW NO.	TIME			CUBIC YARDS
	START	FINISH	LOADING	

TIDE DATA (all dredges)		
STAGE	TIME	SLACK
H.W.	hrs.	
L.W.	hrs.	
H.W.	hrs.	
L.W.	hrs.	

LOCATION OF TIDE GAGE

AV. DEPTH BEFORE DREDGING	AV. DEPTH AFTER DREDGING
MIN. DEPTH AFTER DREDGING	MAX. DEPTH AFTER DREDGING
LENGTH OF CUT	WIDTH OF CUT

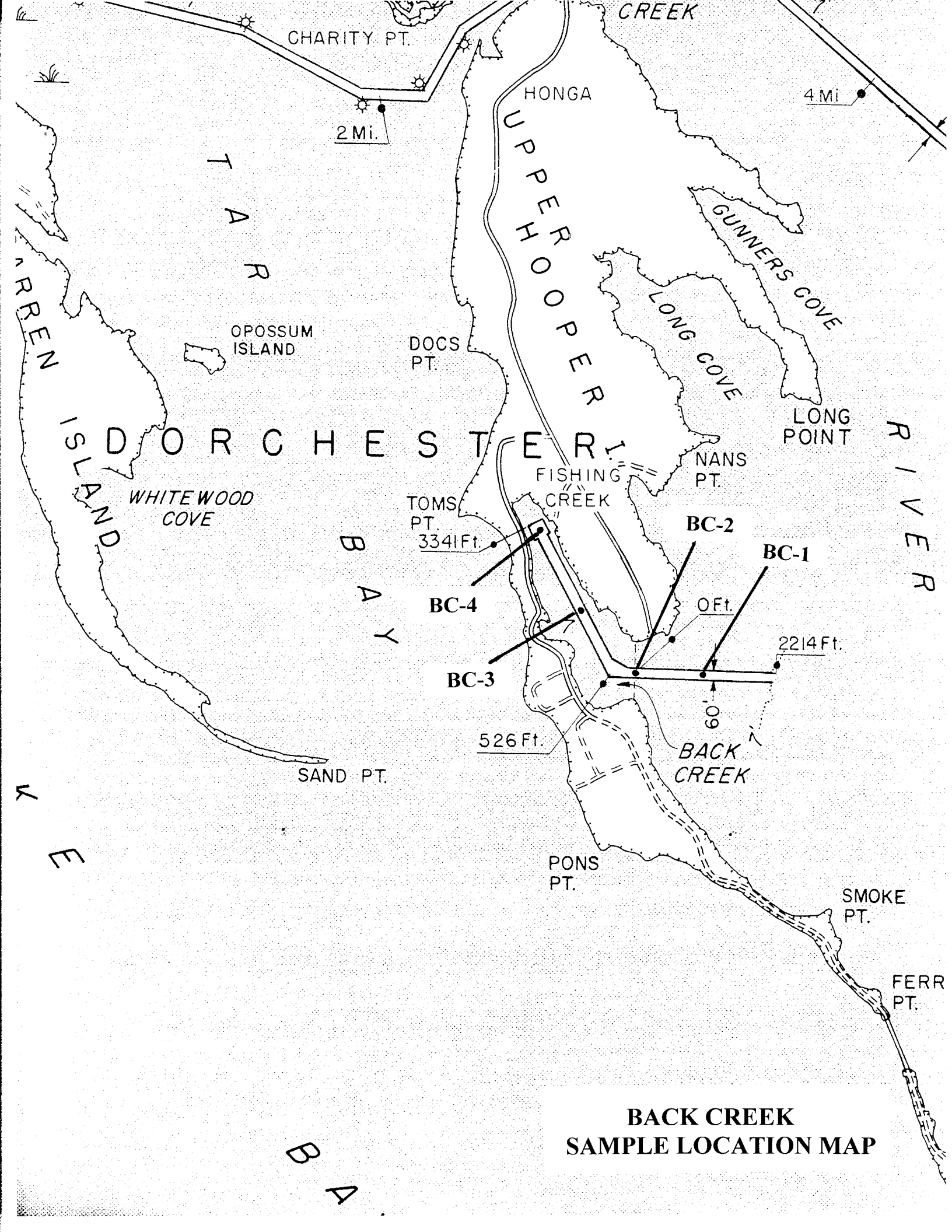
NO. OF MOVE OR SOUNDING	DISTANCE	TIME	TIDE	SOUNDINGS Upper – As Taken Lower – Reduced to M.L.W.	NO. OF MOVE OR SOUNDING	DISTANCE	TIME	TIDE	SOUNDINGS Upper – As Taken Lower – Reduced to M.L.W.

SUBMITTED BY	TITLE	DATE

(back)

ATTACHMENT 3

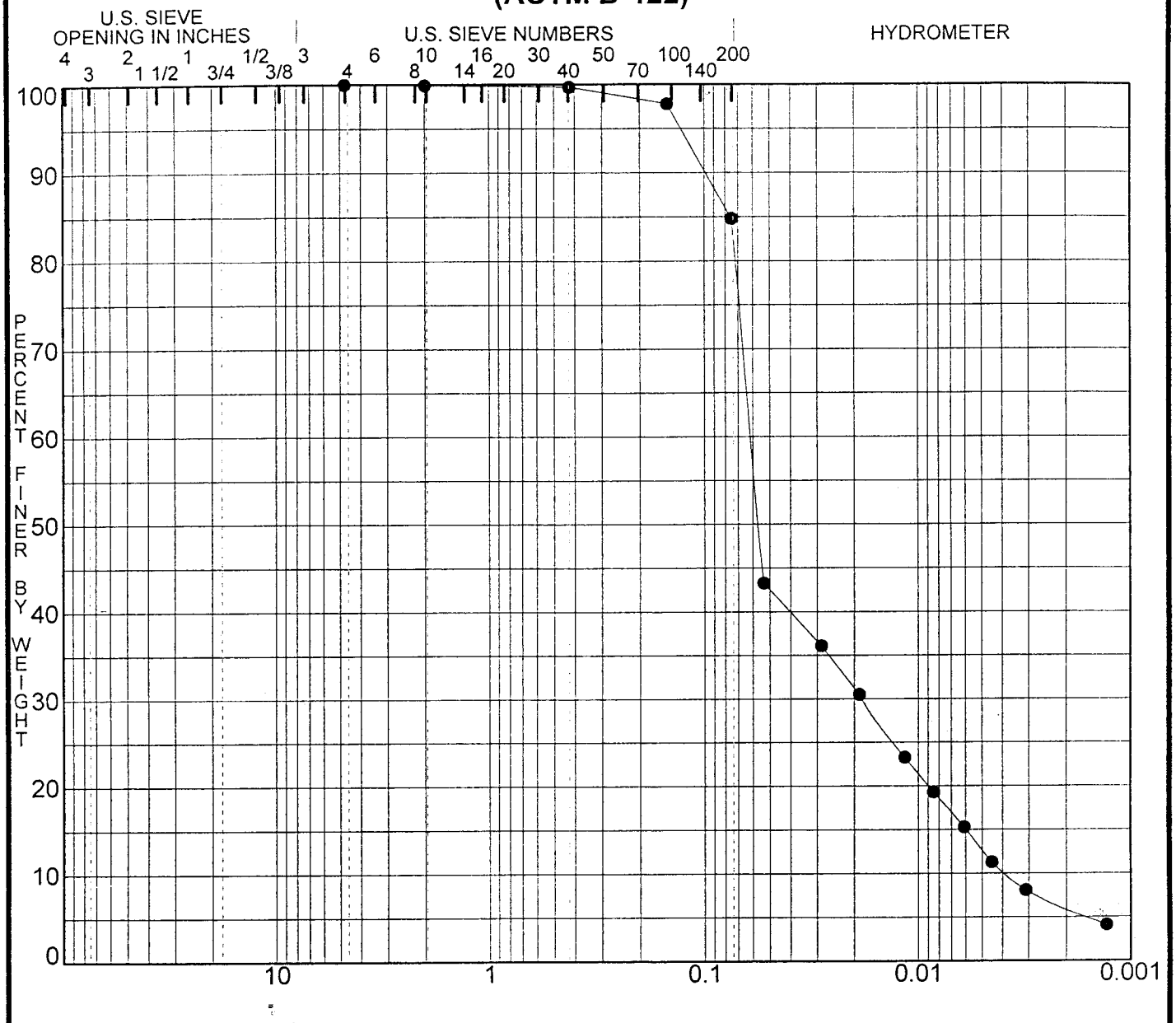
Physical Data – Back Creek



BACK CREEK
SAMPLE LOCATION MAP

McCallum Testing Laboratories, Inc.

PARTICLE SIZE ANALYSIS
(ASTM D 422)



GRAVEL		SAND			SILT OR CLAY
coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	MC%	LL	PL	PI	Cc	Cu
● BC-1	Gray, clayey fine sandy silt with traces of shell fragments, ML	---	---	---	---	1.42	15.8

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BC-1	4.75	0.06	0.018	0.0039	0.0	15.2	72.1	12.7

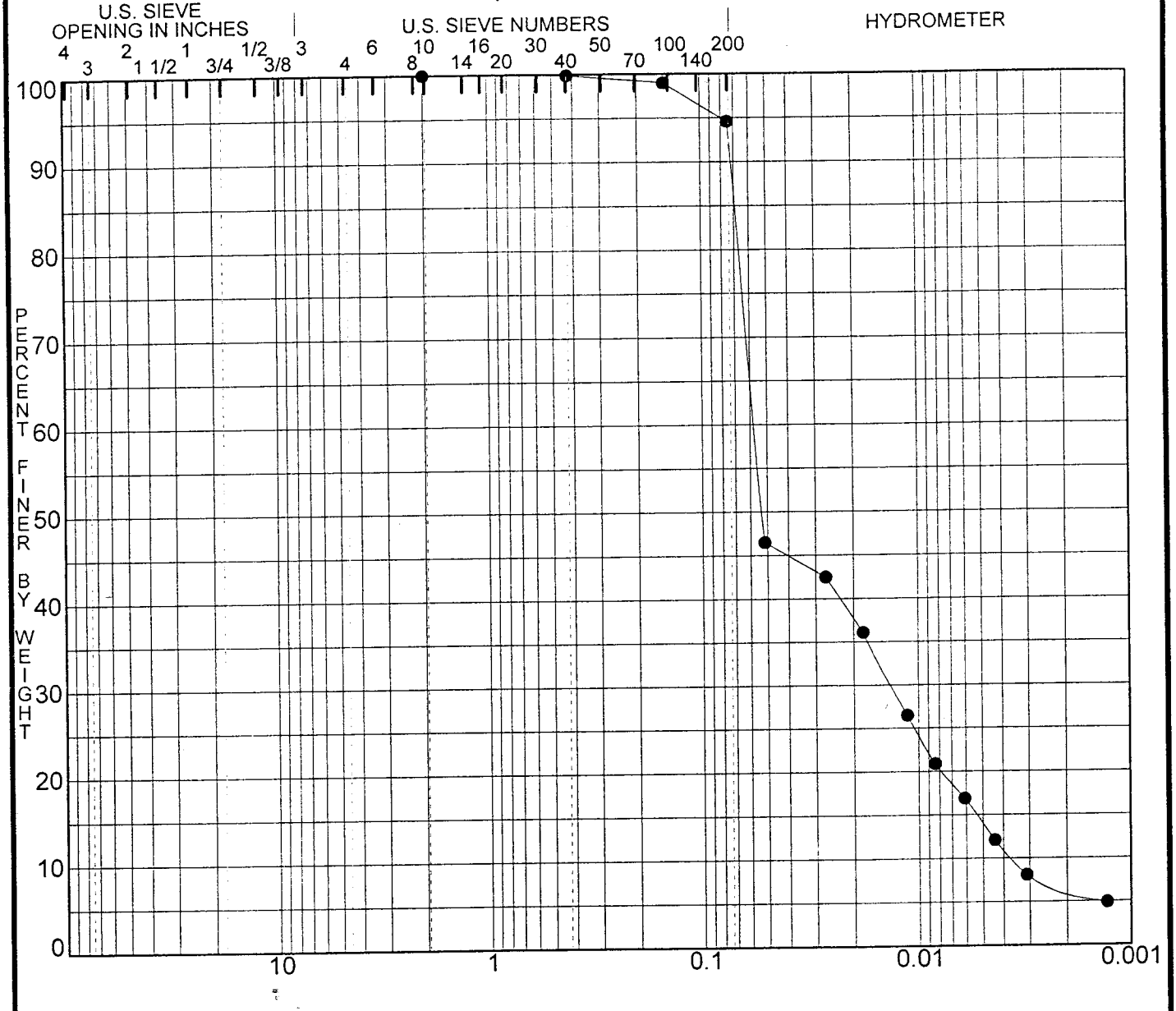
PROJECT Sediment Material Analysis - Back Creek, Dorchester, Maryland

JOB NO. 00-1420

DATE 9/27/00

McCallum Testing Laboratories, Inc.

PARTICLE SIZE ANALYSIS
(ASTM D 422)



GRAVEL		SAND			SILT OR CLAY
coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	MC%	LL	PL	PI	Cc	Cu
● BC-2	Gray, fine sandy clayey silt, ML	---	---	---	---	0.86	15.7

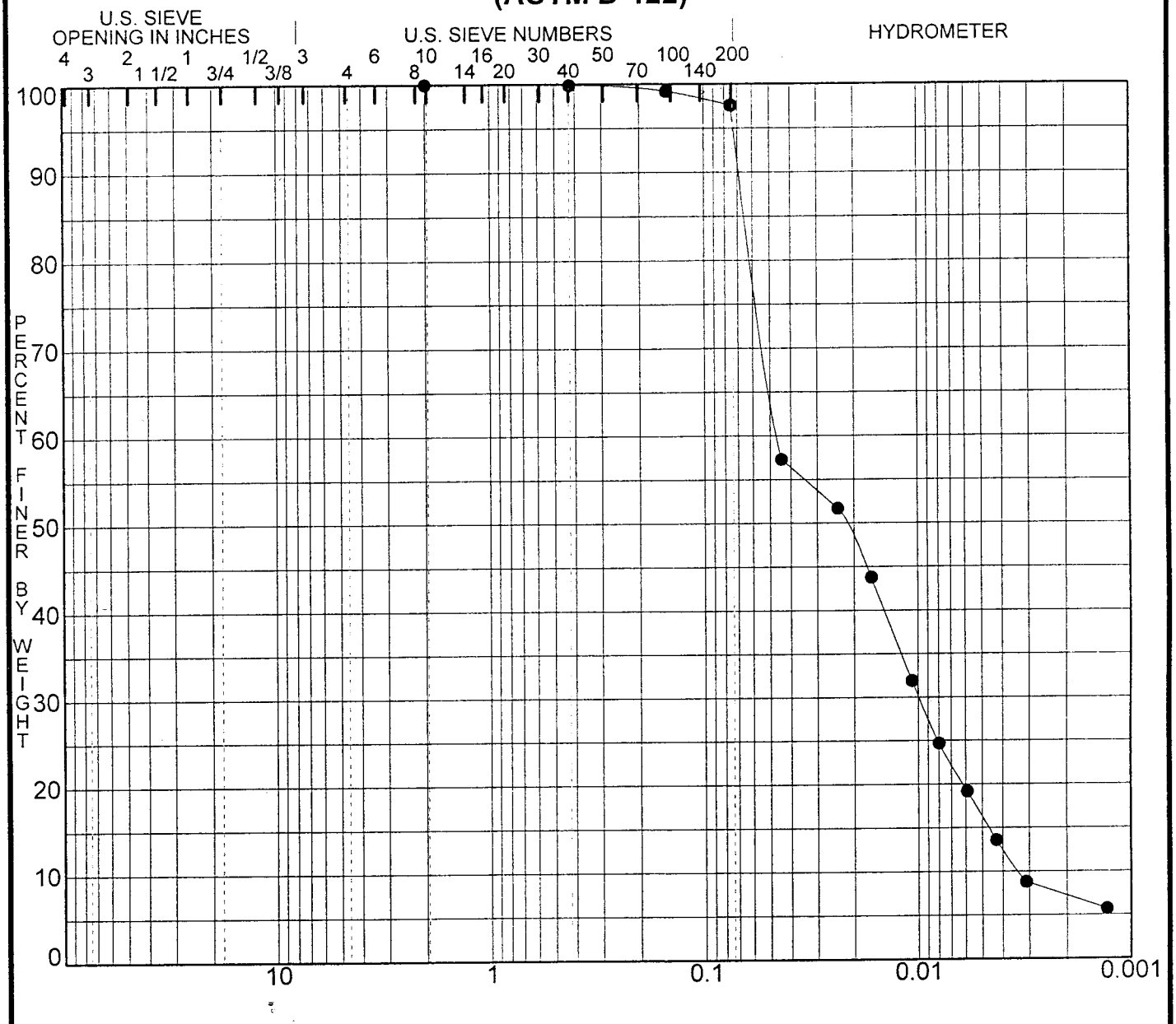
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BC-2	2.00	0.06	0.013	0.0037	0.0	5.4	80.6	14.0

PROJECT Sediment Material Analysis - Back Creek, Dorchester, Maryland

JOB NO. 00-1420
DATE 9/27/00

McCallum Testing Laboratories, Inc.

PARTICLE SIZE ANALYSIS
(ASTM D 422)



GRAVEL		SAND			SILT OR CLAY
coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	BC-3	Gray, clayey silt with traces of fine sand and shell fragments, ML	---	---	---	---	0.63	13.7

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BC-3	2.00	0.05	0.010	0.0034	0.0	2.4	81.3	16.3

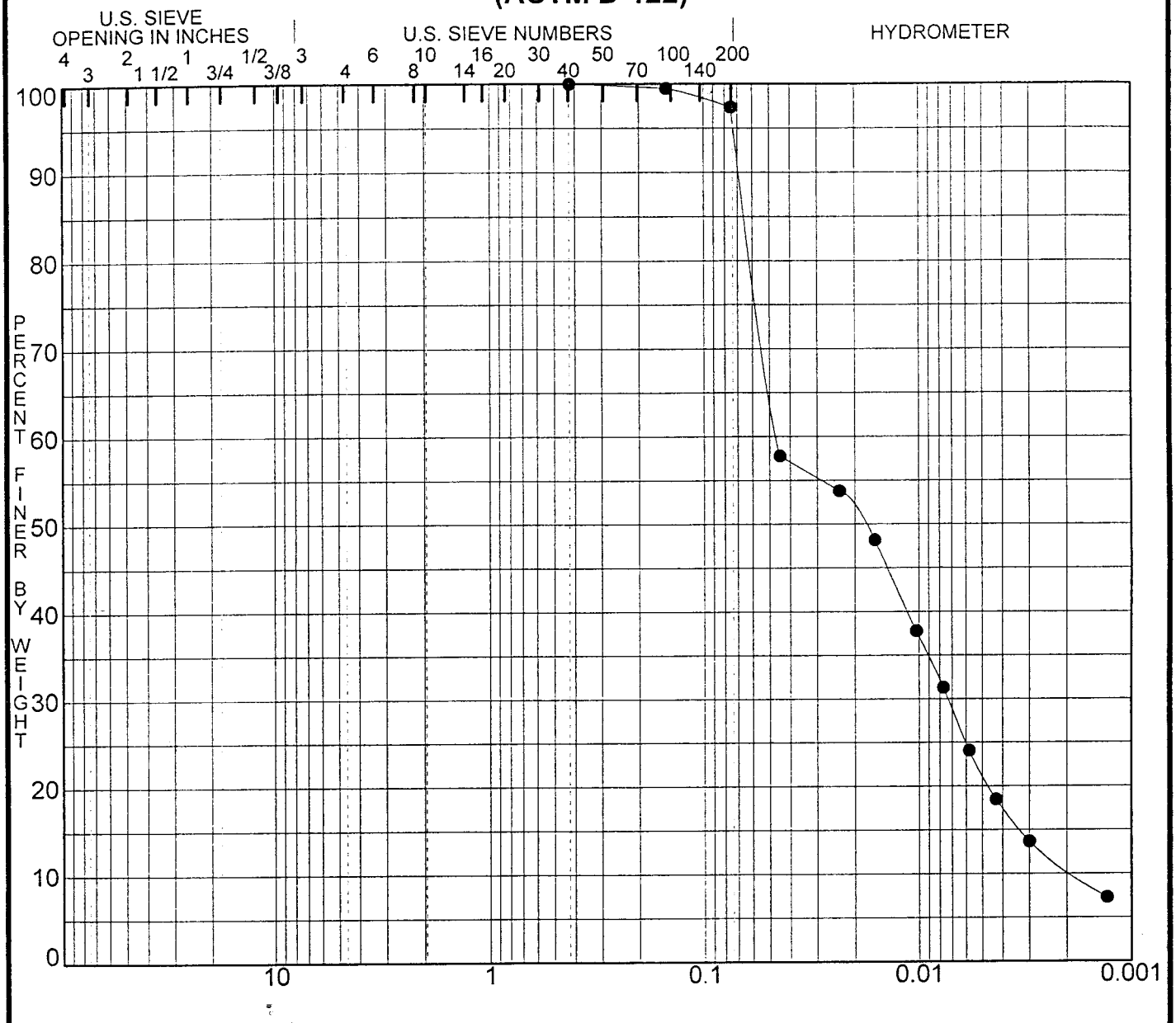
PROJECT **Sediment Material Analysis - Back Creek, Dorchester, Maryland**

JOB NO. **00-1420**

DATE **9/27/00**

McCallum Testing Laboratories, Inc.

PARTICLE SIZE ANALYSIS
(ASTM D 422)



GRAVEL		SAND			SILT OR CLAY
coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	MC%	LL	PL	PI	Cc	Cu
● BC-4	Dark gray, clayey silt with traces of fine sand, ML	---	---	---	---	0.63	25.0

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BC-4	0.43	0.05	0.007	0.0018	0.0	2.6	76.1	21.3

PROJECT Sediment Material Analysis - Back Creek, Dorchester, Maryland

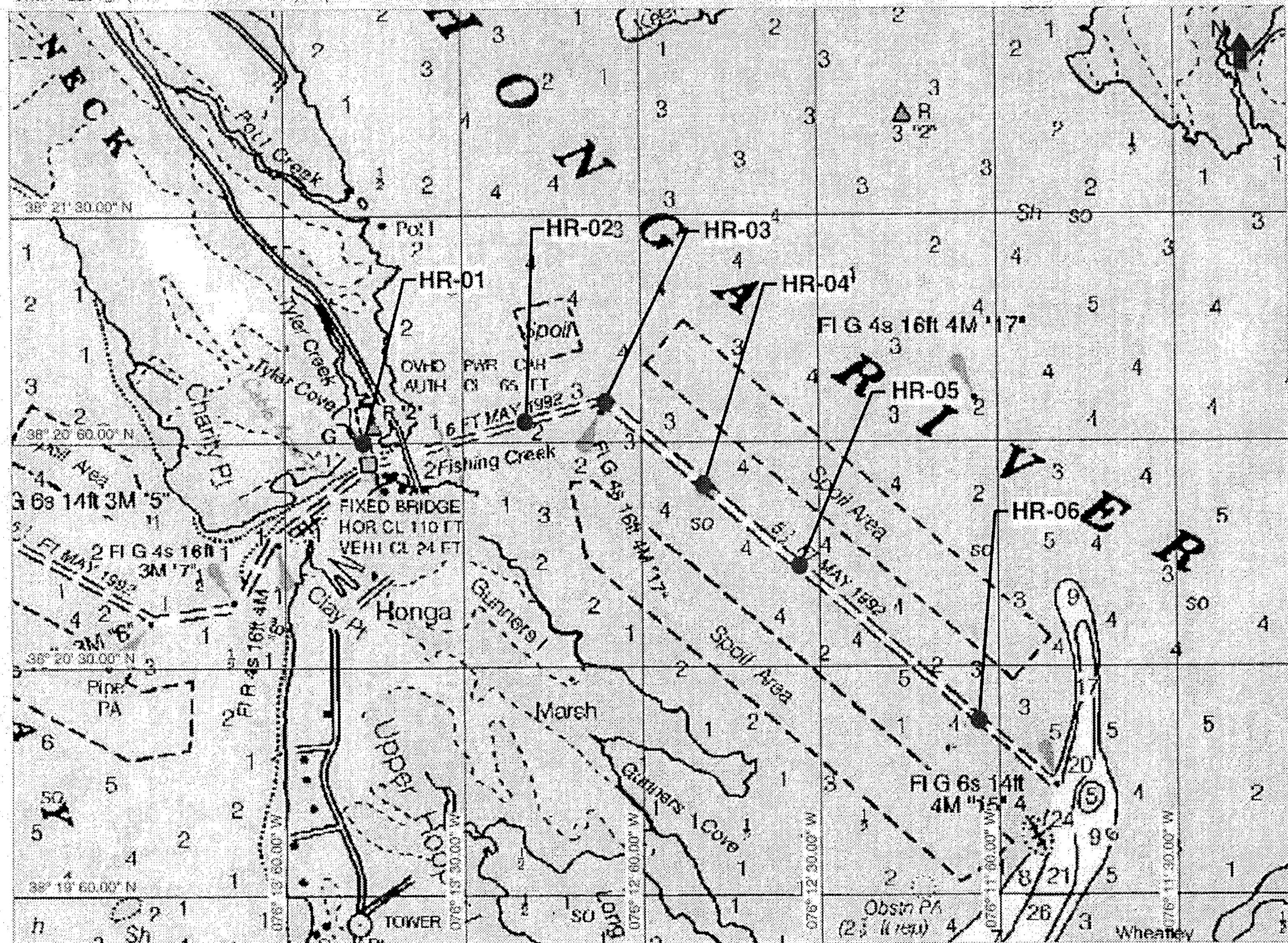
JOB NO. 00-1420

DATE 9/27/00

ATTACHMENT 4

Physical Data – Honga East Side

HONGA NANTICOKE WICOMICO RIVERS AND FISHING BAY
Chart 12261_1 (BSB Electronic Charts) Depth Units: FEET Datum: NAD83 (North American Datum 1983)



DO NOT USE FOR NAVIGATION PURPOSES
Printed by ChartView™ from Nobeltec Corporation (503) 579-1414

Chain of Custody Record

Client: EA Engineering Science, and Technology, Inc. 15 Loveton Circle Sparks, MD 21152	Project Manager: Christine Papageorgis Phone: 410-771-4950 Quote:	Laboratory: E2CR 9004 Yellow Brick Road Suite E Baltimore, MD 21237 Phone: 410-574-4393 Fax: 410-574-7970

Project Name: Honga River Sediment

Project#: 61625.01

Page 1 of 1

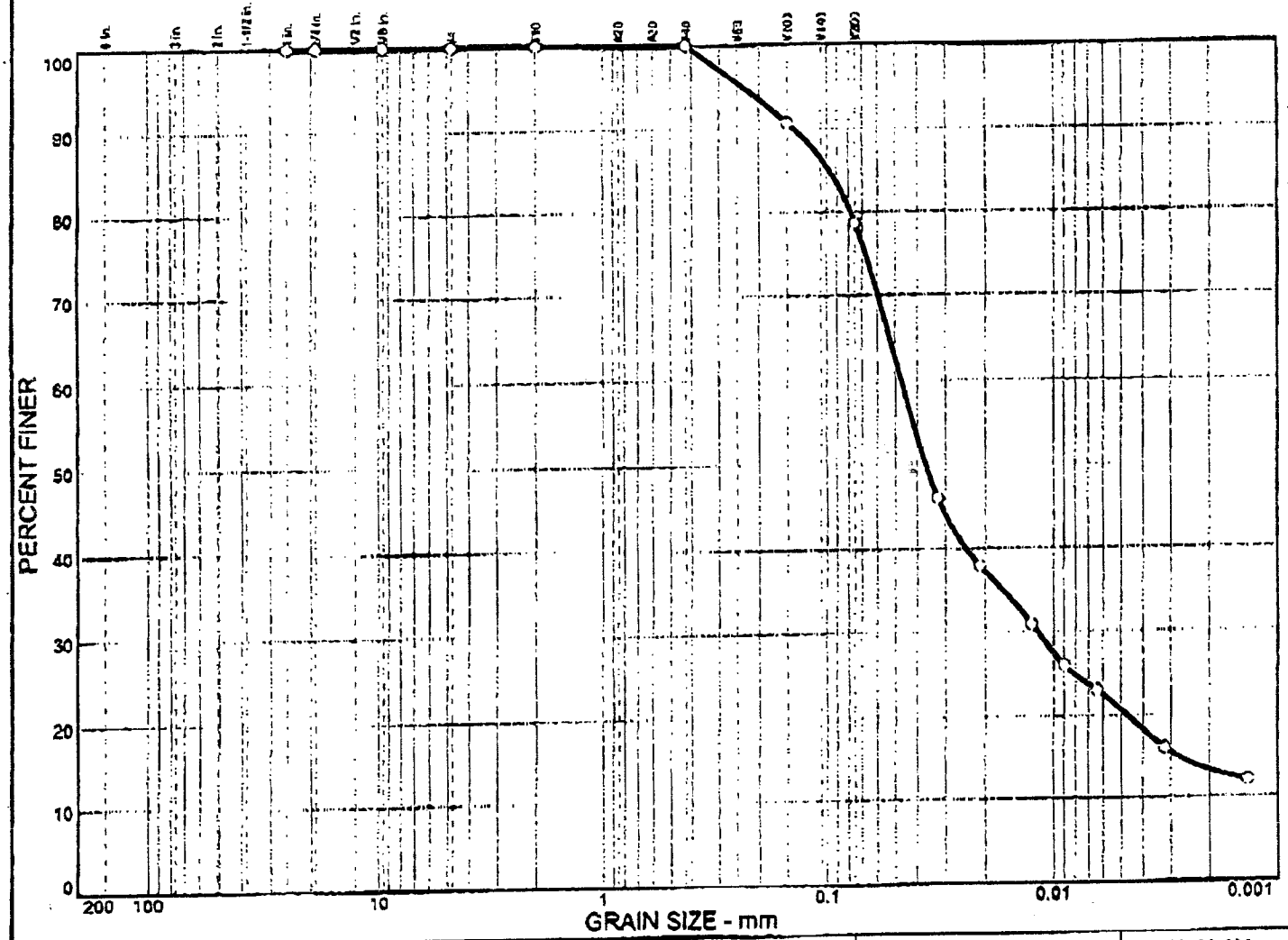
Parameters/Method Numbers for Analysis: 03533-03

Date	Time	Water	Sediment	Sample Identification	No. of Containers	Grain Size ASTM D422 (Sieve/Hydrometer)	Remarks
5/22/03	1320		X	HR-01-SED	2	X	Two containers provided for each
↓	1250		X	HR-02-SED	2	X	sample to provide extra volume in
↓	1225		X	HR-03-SED	2	X	case of sample breakage, loss, etc.
↓	1200		X	HR-04-SED	2	X	
↓	1145		X	HR-05-SED	2	X	One extra sample provided for
↓	1110		X	HR-06-SED	2	X	duplicate analysis at designated
↓	1225		X	HR-DUP-SED (03 AP)	1	X	location.

SEND RESULTS TO :
Attn: John Matkowski
EA Engineering, Science, & Tech.
15 Loveton Circle
Sparks, MD 21152

Sampled by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time
[signature]	5/22/03 1400	[signature]	5/29/03 1405
Relinquished by: (Signature)	**Date/Time**	**Received by Laboratory: (Signature)**	**Date/Time**
[signature]	5/28/03 1410	[signature] SIVA BALU	5/28/03

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	21.4	58.0	20.6

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_U
○			0.0971	0.0471	0.0367	0.0117	0.0028			

MATERIAL DESCRIPTION	USCS	AASHTO
○ Dark Gray, SILT, Clayey Fine Sand trace Organic and Mica & Shell	ML	

Project No. 03533-03 **Client:** E A Engineering Science,and Technology,Inc.

Project: Honga River Sediment

○ **Source:** SED **Sample No.:** HR-01

Remarks:

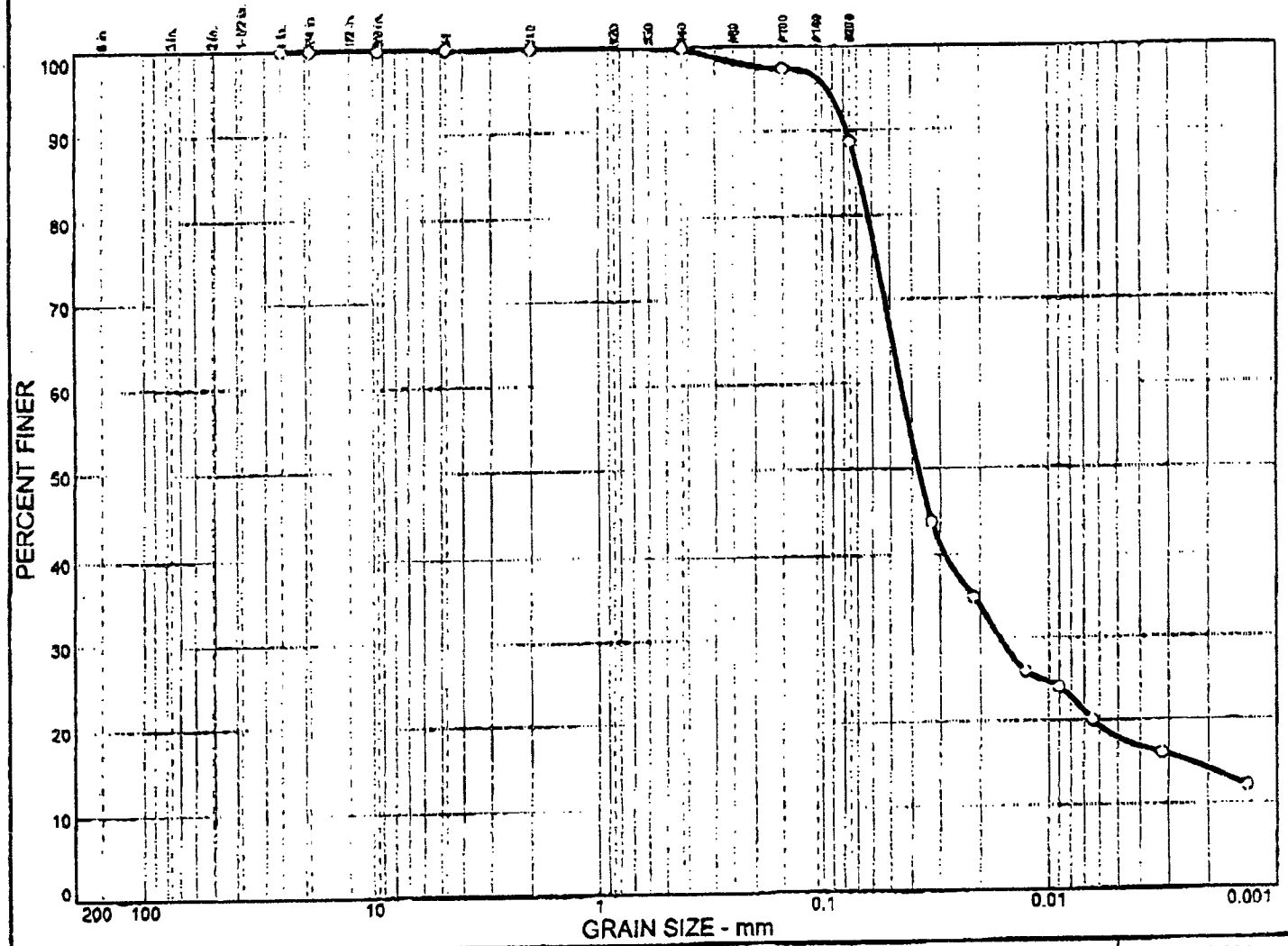
○ Natural Moisture =85.7%

Particle Size Distribution Report

E2CR, Inc.

Figure No.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	11.3	70.9	17.8

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.0688	0.0448	0.0375	0.0164	0.0025			

MATERIAL DESCRIPTION	USCS	AASHTO
○ Greenish Gray, SILT, little Clay and Fine Sand, trace Mica	ML	

Project No. 03533-03 **Client:** E A Engineering Science,and Technology,Inc.

Project: Honga River Sediment

○ **Source:** SED **Sample No.:** HR-02

Remarks:

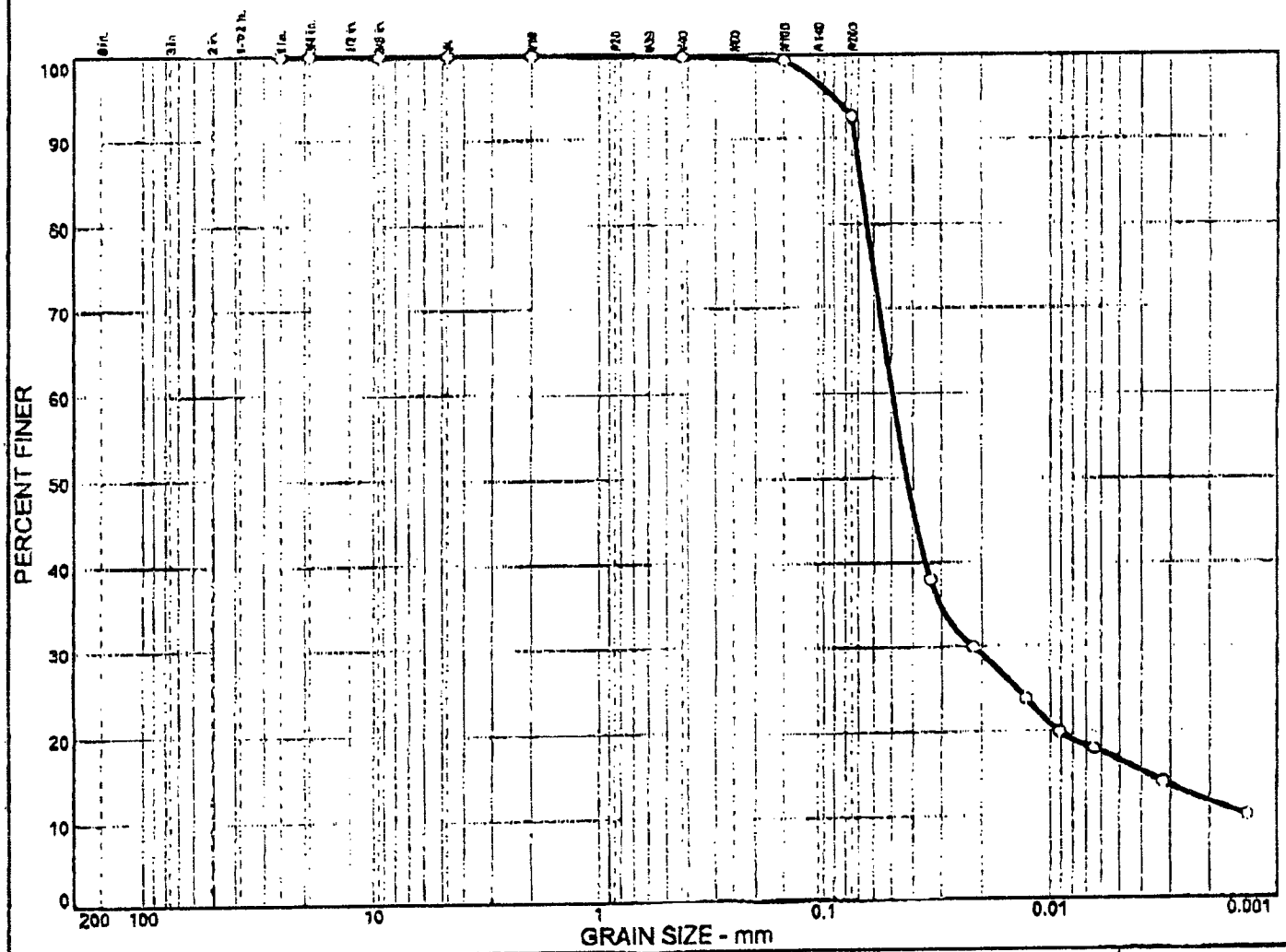
○ Natural Moisture =69.4%

Particle Size Distribution Report

E2CR, Inc.

Figure No.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	7.4	76.0	16.6

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.0683	0.0495	0.0425	0.0216	0.0038	0.0014	6.99	36.63

MATERIAL DESCRIPTION	USCS	AASHTO
○ Greenish Gray, SILT, little Clay trace Fine Sand and Mica	ML	

Project No. 03533-03 **Client:** E A Engineering Science,and Technology,Inc.

Project: Honga River Sediment

○ **Source:** SED **Sample No.:** HR-03

Remarks:

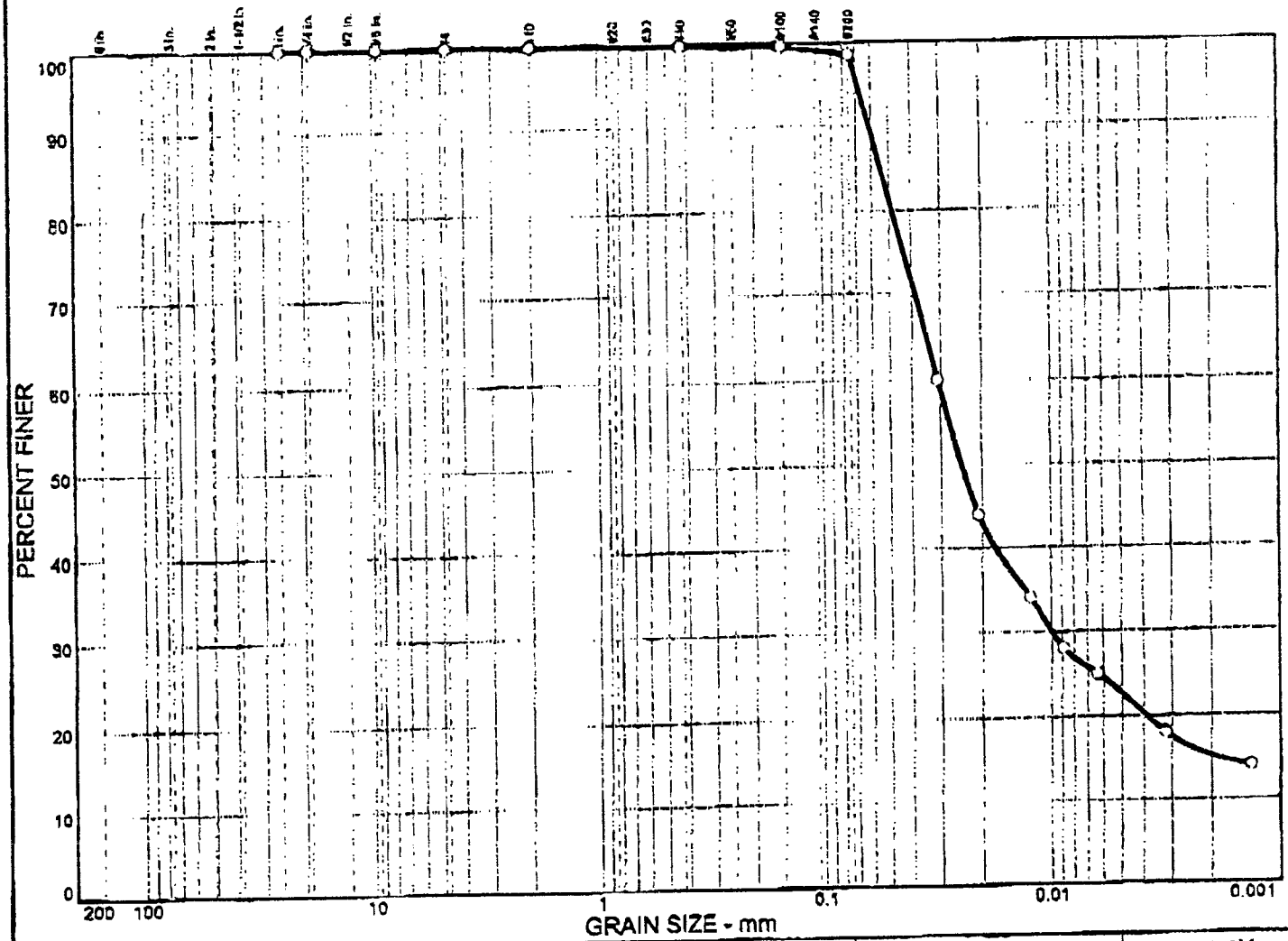
○ Natural Moisture =68.5%

Particle Size Distribution Report

E2CR, Inc.

Figure No.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	1.4	75.8	22.8

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_C	C_u
○			0.0546	0.0308	0.0245	0.0100	0.0019			

MATERIAL DESCRIPTION	USCS	AASHTO
○ Greenish Gray, SILT, some Clay, trace Organic and Mica	ML	

Project No. 03533-03 **Client:** E A Engineering Science,and Technology,Inc.

Project: Honga River Sediment

○ **Source:** SED **Sample No.:** HR-04

Remarks:

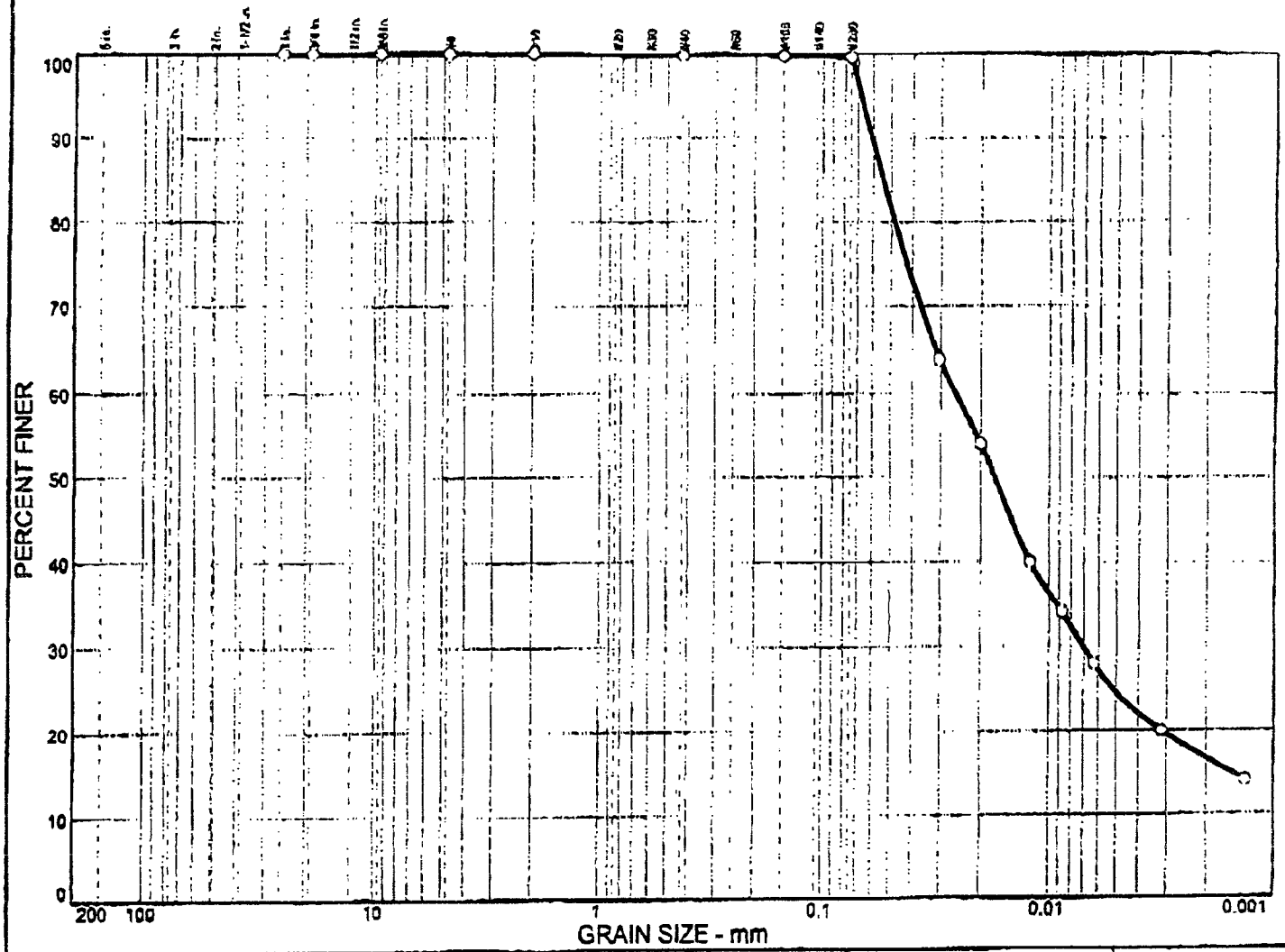
○ Natural Moisture =92.6%

Particle Size Distribution Report

E2CR, Inc.

Figure No.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	0.4	75.0	24.6

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.0541	0.0258	0.0173	0.0070	0.0016			

MATERIAL DESCRIPTION	USCS	AASHTO
○ Greenish Gray, SILT, some Clay, trace Organic and Mica & Shell	ML	

Project No. 03533-03 Client: E A Engineering Science,and Technology,Inc.

Project: Honga River Sediment

○ Source: SED Sample No.: HR-05

Remarks:

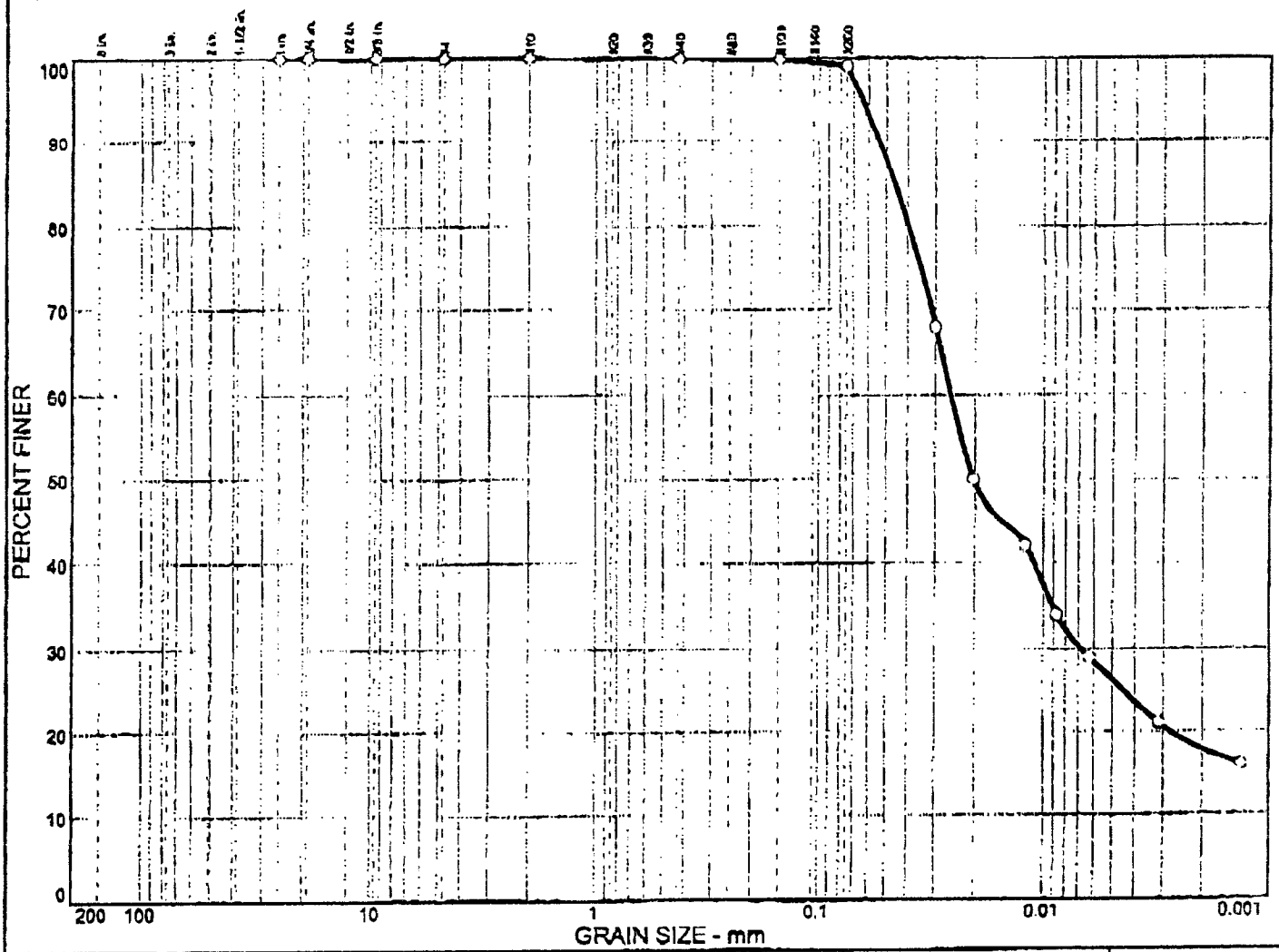
○ Natural Moisture = 113.7%

Particle Size Distribution Report

E2CR, Inc.

Figure No.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	0.0	1.0	72.7	26.3

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.0457	0.0255	0.0202	0.0068				

MATERIAL DESCRIPTION	USCS	AASHTO
○ Greenish Gray, SILT, some Clay, trace Organic and Mica & Shell	ML	

Project No. 03533-03 **Client:** E A Engineering Science,and Technology,Inc.

Project: Honga River Sediment

○ **Source:** SED **Sample No.:** HR-6

Remarks:

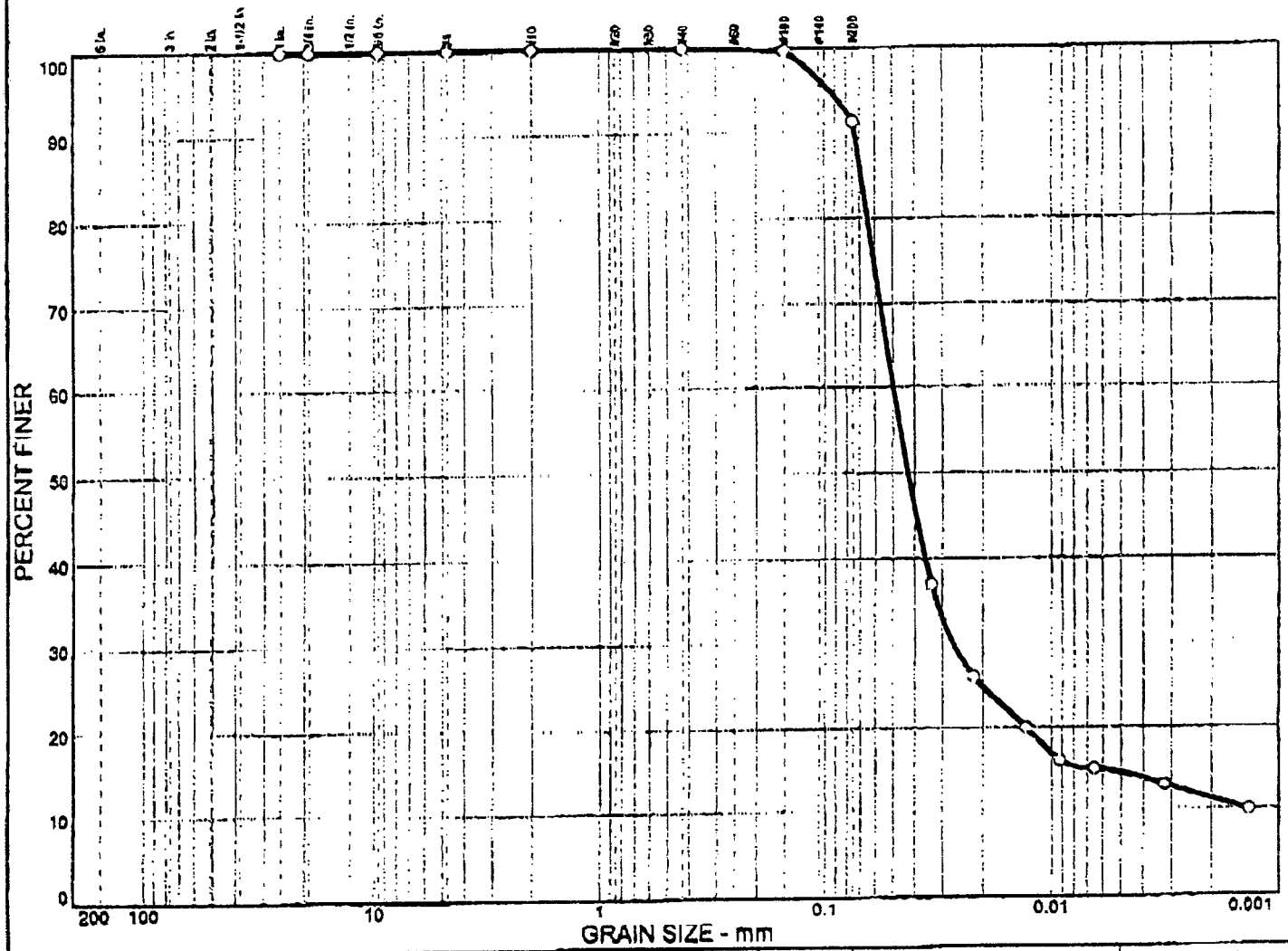
○ Natural Moisture =128.7%

Particle Size Distribution Report

E2CR, Inc.

Figure No.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
O	0.0	0.0	8.7	76.8	14.5

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
O			0.0691	0.0496	0.0427	0.0270	0.0065	0.0014	10.87	36.74

MATERIAL DESCRIPTION	USCS	AASHTO
O Greenish Gray, SILT, little Clay, Trace Organic and Mica	ML	

Project No. 03533-03 **Client:** E A Engineering Science,and Technology,Inc.

Project: Honga River Sediment

O **Source:** DUP **Sample No.:** HR-03

Remarks:

O Natural Moisture =64.3%

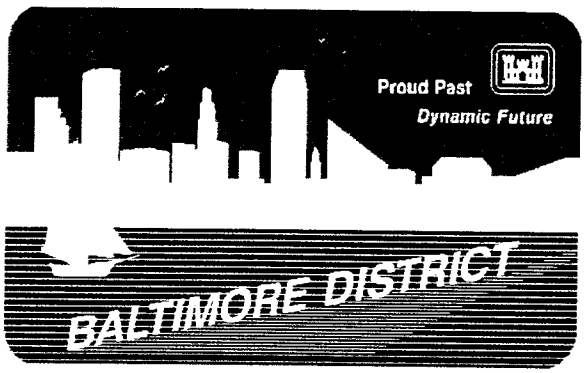
Particle Size Distribution Report

E2CR, Inc.

Figure No.

ATTACHMENT 5

Honga River New Work Subsurface Investigation



U.S. Army Corps of Engineers, Baltimore District
10 S. Howard Street, Baltimore, MD 21201, Phone: (410) 962-4450, Facsimile: (410) 962-7731

DATA REPORT

FOR

HONGA RIVER & TAR BAY SUBSURFACE INVESTIGATION

Middle Hopper Island; Dorchester County, MD

April 2003

TABLE OF CONTENTS

TABLES

PLATES

APPENDICES

Data Report
For
Honga River & Tar Bay

1.0 INTRODUCTION

This report presents the results of the subsurface investigation conducted to physically characterize sediment samples collected from the proposed new channel alignment at the mouth of the Honga River at Tar Bay to North of Barren's Island. The sediment borings were collected from approximately ½ to 1 miles offshore of Hopper Island. The subsurface investigation consisted of 6 subsurface borings with a planned investigation depth to the -12 Foot Mean Lower Low Water (MLLW) datum. The offshore subsurface investigation was performed by the Baltimore District's Field Investigation Unit (FEU). The FEU also provided surveying support for boring locations.

2.0 SCOPE OF INVESTIGATION & EQUIPMENT

2.1 Boring Locations: Six (6) borings (TB-1, TB-2, TB-3, TB-4, TB-5, and TB-6) were completed along the new proposed channel area on March 20 through 22, 2003. The sampling locations were selected and coordinates determined for each boring by project team members of Baltimore District's Navigation Support Section. Each boring's location was selected to maximize investigation of the area of interest and were placed along intervals of 1000 feet of the new proposed channel's reach. Boring locations were marked by using weighted buoys prior to the barge's movement into position for sampling. TABLE 1, "SUMMARY OF SAMPLING DATA", summarizes general geotechnical information gathered during this study.

2.2 Drilling Equipment & Platform: All borings were completed offshore using a Acker Lightweight Motorized Hoist with Portable Derrick with a 4-cycle 5 HP Briggs & Stratton Engine. The portable derrick was secured onboard a floating platform (16' wide by 22' long barge). The Acker Lightweight Hoist has a cathead rotary speed of 175 to 225 RPM with a lifting capacity rated at 500 lb. A 17 foot long Boston Whaler powered by 40 HP Johnson Marine Outboard Engine was used to navigate and position the barge over each boring location.

2.3 Boring Positioning: Coordinates for each boring were established by marker buoy utilizing a Garmin GPS 76 Wide Area Augmentation System (WAAS). Buoy markers were used for navigating boat and barge to a position as close as possible to the sampling coordinates. The precision of the Garmin GPS 76 system is rated as sub-meter (3 feet) or better.

2.4 Sediment Sampling Method: Sediment was sampled using the Standard Penetration Test (SPT) method. The planned investigation sampling depth was the -12.0 foot Mean Lower Low Water (MLLW) datum or a SPT penetration refusal of less than 0.2 feet of penetration per 100 blows. All borings were sampled continuously in 1½' increments by the SPT method from the

channel floor to a depth of -12.0 feet below MLLW. The SPT method consisted of driving a 1⅜ inch ID by one foot six inch (1.5') long split spoon sampler with a 140 pound hammer free falling thirty inches. On some SPT increments the weight of rod (WR) or weight of hammer (WH) was sufficient to advance the sampler the required one and a half foot. Each boring was prevented from inward collapse (or caving) during sampling by advancing 3¼" ID hollow stem augers with auger plug inserted between sampling drives. Recovered sediments for each split spoon were then placed in an air tight glass jar for shipment to the laboratory. The number of blows counts required to advance the sample spoon 0.5 feet in each foot and a half of drive were recorded. A total of 52.5 linear feet (approximately 35 SPT 0.5 foot sample lengths) of sediment were sampled from the 6 subsurface borings. The SPT method provides a disturbed sample for defining sediment stratification as well as blow count data (N-Values) which gives an indication of soil consistency and relative density.

TABLE 1
SUMMARY OF SAMPLING DATA

Boring Number	Sampling Date & Time	Boring Coordinates* Easting	Boring Coordinates* Northing	Tide (Ft. MLLW)	Channel Depth (Ft. MLLW)	BOH (Ft. MLLW)	Linear Feet Sampled	Number of Samples Collected
TB-1	3/21/03 - 0817	1435221.00	578856.60	2.3	5.7	14.7	9.0	7[1]
TB-2	3/21/03 – 0937	1435203.12	578777.41	2.3	3.7	12.7	9.0	6
TB-3	3/21/03 – 1038	1434517.99	578225.70	1.9	3.2	10.7	7.5	5
TB-4	3/21/03 – 1225	1435706.72	578550.72	1.2	4.5	12.0	7.5	5
TB-5	3/21/03 – 1339	1435745.90	578413.94	0.8	5.1	14.1	9.0	7[2]
TB-6	3/21/03 – 1506	1442500.00	576020.00	0.4	3.6	14.1	10.5	7

** Maryland State Plane Coordinate System (NAD 83)
[1] SPT Drive 5 Split Into Two Jars
[2] SPT Drive 6 Split Into Two Jars

2.5 Channel Depth and Tidal Information: Water soundings were obtained mechanically at the start of each borehole. A ¼ pound weighed brass rod was suspended from a fiberglass measuring tape once the barge was securely anchored at each sampling location. Initial tidal reading was obtained from the USACE tide board located on Middle Hopper Island at the Tar Bay inlet at the start of the project. Corrections to sampling depth relative to MLLW were made in the office by incorporating tide data acquired from NOAA's Water Level Station on Barren Island. Each Channel Depth MLLW was then calculated by subtracting tide from depth soundings. Calculation for MLLW for each boring is shown in Table 1.

3.0 LABORATORY TESTING PROCEDURE

All geotechnical soil tests were performed by the Baltimore District's Material and Instrumentation Unit. A Total of 37 sample jars were collected during this subsurface investigation. Visual classifications of all jar samples were completed by an experienced soils technician, and a total number of 8 jar samples were selected for Atterberg limits, mechanical analysis (grain size), and specific gravity. All soil testing was performed in accordance with EM 1110-2-1906. Upon completion of the testing, all samples were

channel floor to a depth of -12.0 feet below MLLW. The SPT method consisted of driving a 1⅜ inch ID by one foot six inch (1.5') long split spoon sampler with a 140 pound hammer free falling thirty inches. On some SPT increments the weight of rod (WR) or weight of hammer (WH) was sufficient to advance the sampler the required one and a half foot. Each boring was prevented from inward collapse (or caving) during sampling by advancing 3¼" ID hollow stem augers with auger plug inserted between sampling drives. Recovered sediments for each split spoon were then placed in an air tight glass jar for shipment to the laboratory. The number of blows counts required to advance the sample spoon 0.5 feet in each foot and a half of drive were recorded. A total of 52.5 linear feet (approximately 35 SPT 0.5 foot sample lengths) of sediment were sampled from the 6 subsurface borings. The SPT method provides a disturbed sample for defining sediment stratification as well as blow count data (N-Values) which gives an indication of soil consistency and relative density.

TABLE 1
SUMMARY OF SAMPLING DATA

Boring Number	Sampling Date & Time	Boring Coordinates** Easting	Boring Coordinates** Northing	Tide (Ft. MLLW)	Channel Depth (Ft. MLLW)	BOH (Ft. MLLW)	Linear Feet Sampled	Number of Samples Collected
TB-1	3/21/03 - 0817	1435221.00	578856.60	2.3	5.7	14.7	9.0	7[1]
TB-2	3/21/03 – 0937	1435203.12	578777.41	2.3	3.7	12.7	9.0	6
TB-3	3/21/03 – 1038	1434517.99	578225.70	1.9	3.2	10.7	7.5	5
TB-4	3/21/03 – 1225	1435706.72	578550.72	1.2	4.5	12.0	7.5	5
TB-5	3/21/03 – 1339	1435745.90	578413.94	0.8	5.1	14.1	9.0	7[2]
TB-6	3/21/03 – 1506	1442500.00	576020.00	0.4	3.6	14.1	10.5	7

** Maryland State Plane Coordinate System (NAD 83)
[1] SPT Drive 5 Split Into Two Jars
[2] SPT Drive 6 Split Into Two Jars

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3.0 LABORATORY TESTING PROCEDURE

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assigned a soil classification in conformance with the Unified Soil Classification System (USCS). TABLE 2, "SUMMARY OF SEDIMENT DATA", summarizes the field data and laboratory test results performed on sediment samples selected for testing. Visual-Manual Classifications are presented in Appendix A. Laboratory Test Results and Grain Size Analysis are located in Appendix B. Sediment and associated properties are described according to recommendations suggested in U.S. Waterway Experiment Station (WES) Laboratory report "Geotechnical Factors in the Dredgeability of Sediments - Geotechnical Descriptors for Sediment to be Dredged". Field Notes and Field Boring Logs are included in Appendix C.

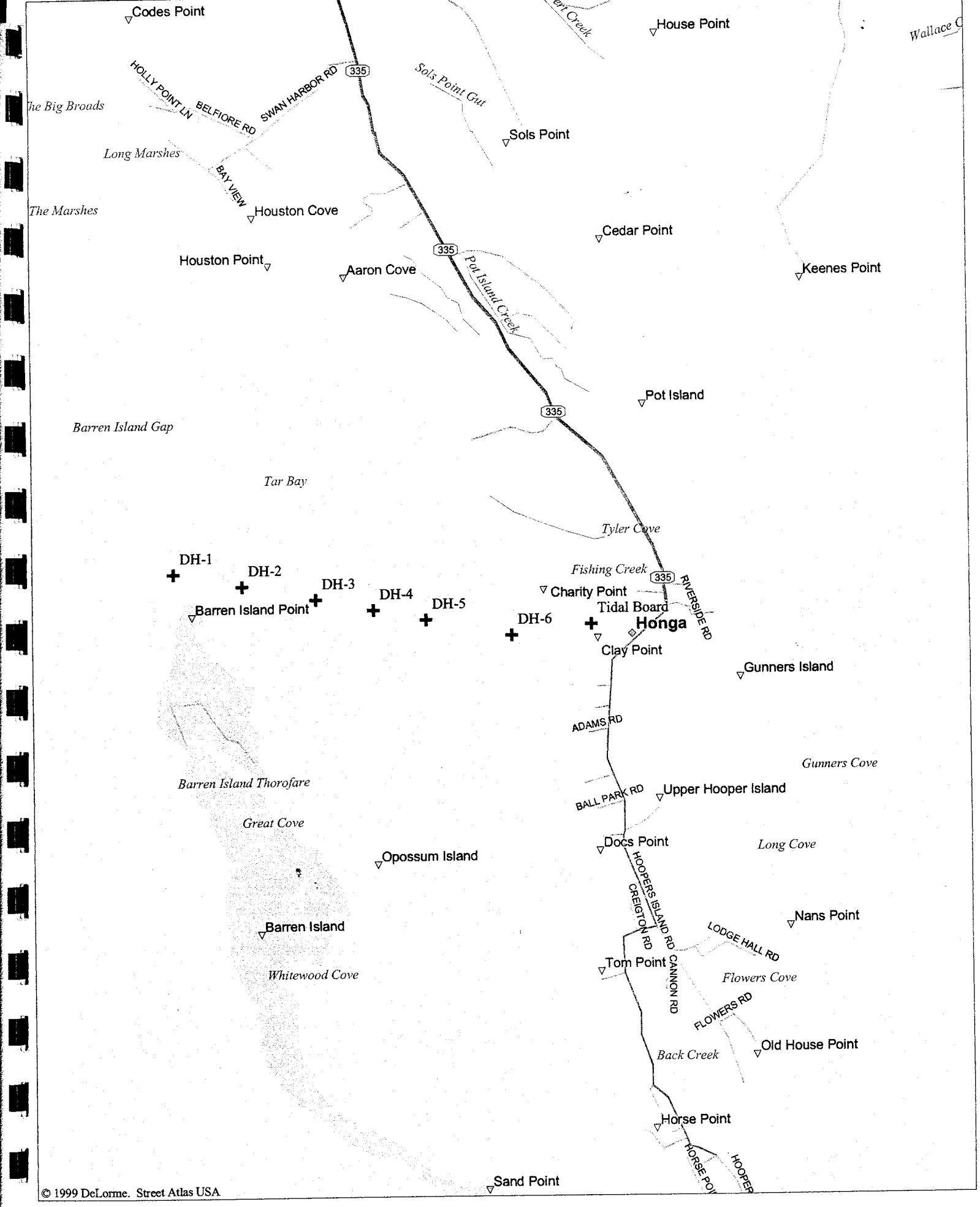
TABLE 2
SUMMARY OF SEDIMENT DATA

Boring Number	Sample Number	Depth Sampled (feet)	Blow Counts	Soil Type(s) (USCS)	Testing Completed This Sample	Organic Classification	Specific Gravity
TB-1	Jar 1	0.0-1.5	2-3-5	SP-SM		Inorganic	
	Jar 2	1.5-3.0	5-7-8	SP-SM	Yes	Inorganic	2.62
	Jar 3	3.0-4.5	4-5-6	SM		Inorganic	
	Jar 4	4.5-6.0	5-7-7	ML/SM	Yes	Inorganic	2.64
	Jar 5*	6.0-6.7	6-3-2	SM		Inorganic	
	Jar 6*	6.7-7.5	6-3-2	MH/CL		Inorganic	
	Jar 7	7.5-9.0	1-1-1	MH/CL		Inorganic	
TB-2	Jar 1	0.0-1.5	WR-WR-WH	ML/CL		Inorganic	
	Jar 2	1.5-3.0	WH-WH-WH	ML/CL	Atteburg	Inorganic	
	Jar 3	3.0-4.5	1-2-4	CL	Yes	Inorganic	2.61
	Jar 4	4.5-6.0	2-9-4	SM		Inorganic	
	Jar 5	6.0-7.5	3-6-11	CL		Inorganic	
	Jar 6	7.5-9.0	5-6-3	SM		Inorganic	
TB-3	Jar 1	0.0-1.5	WR-WH-WH	ML		Inorganic	
	Jar 2	1.5-3.0	1-WH-WH	ML		Inorganic	
	Jar 3	3.0-4.5	WH-WH-WH	CL	Yes	Inorganic	2.66
	Jar 4	4.5-6.0	WR-WR-WH	CL	Yes	Inorganic	2.69
	Jar 5	6.0-7.5	WH-WH-WH	CL		Inorganic	
TB-4	Jar 1	0.0-1.5	WR-1-1	SM		Inorganic	
	Jar 2	1.5-3.0	WH-WH-WH	no sample		Inorganic	
	Jar 3	3.0-4.5	WR-WH-WH	ML	Yes	Inorganic	2.66
	Jar 4	4.5-6.0	WR-WR-WH	ML		Inorganic	
	Jar 5	6.0-7.5	WR-WR-WH	CH		Inorganic	
TB-5	Jar 1	0.0-1.5	1-1-1	SM		Inorganic	
	Jar 2	1.5-3.0	WH-WH-WH	ML		Inorganic	
	Jar 3	3.0-4.5	WH-WH-WH	CL	Yes	Inorganic	2.57
	Jar 4	4.5-6.0	WR-WH-WH	CL		Inorganic	
	Jar 5	6.0-7.5	WR-WH-WH	CL		Inorganic	
	Jar 6*	7.5-8.3	WR-2-6	CL		Inorganic	
	Jar 7*	8.3-9.0	WR-2-6	SC/SM		Inorganic	
	Jar 1	0.0-1.5	WR-WH-1	SM		Inorganic	
	Jar 2	1.5-3.0	WR-WH-WH	ML		Inorganic	
	Jar 3	3.0-4.5	WR-WH-WH	ML		Inorganic	
	Jar 4	4.5-6.0	WR-WH-WH	ML		Inorganic	
	Jar 5	6.0-7.5	WH-4-2	SM		Inorganic	
	Jar 6	7.5-9.0	1-2-2	SP-SM		Inorganic	
	Jar 7	9.0-10.5	2-1-2	SP-SM	Yes	Inorganic	2.63

* STP Sample Split Into Two Jars

4.0 DATA CONCLUSION:

Testing conducted for this study consisted of Atteburg Limits, Mechanical Analysis, Loss on Ignition, and Specific Gravity and focused on identifying physical properties of sediment. Interpretation of stratigraphy (surface geologic conditions) or sediment profiles were beyond the requested scope of this study. Sediment sampled in the Channel was not previously explored and is consider new work and generally consisted of a soft to very soft inorganic lean silt (ML) and lean clay (CL) with random interbeded layers of poorly sorted sand (SP), and silty sand (SM). Penetrometer readings in sediment samples ranged from 0.0 tons/ft^2 to greater than 2.5 tons/ft^2 and indicates a sediment with no to medium in-situ shear strengths ranging from 0 to 100 kPa. The higher in-situ shear strengths recorded, 1.5 to 2.5 tons/ft^2, were recorded in boring TB-2 and confirmed by "N" values derived from blow counts shown on field logs for that boring. Penetrometer readings in sediment samples from all other boring area ranged from 0.0 tons/ft^2 to greater than 0.5 tons/ft^2 and indicates a sediment with low in-situ shear strengths ranging from 0< to 25 kPa. "N" values derived from blow counts confirms these values. Siderite or clay ironstone nodules were also present in boring TB-2. And is associated with the member of the Patapsco Member of the Potomac Group in this region.


Codes Point
House Point
Wallace C
HOLLY POINT LN
BELFIORE RD
SWAN HARBOR RD
335
Sols Point Gut
The Big Broads
Sols Point
Long Marshes
BAY VIEW
The Marshes
Houston Cove
Cedar Point
Houston Point
Aaron Cove
335
Pot Island Creek
Keenes Point
Pot Island
335
Barren Island Gap
Tar Bay
Tyler Cove
DH-1
DH-2
DH-3
DH-4
DH-5
DH-6
Fishing Creek
335
RIVERSIDE RD
Charity Point
Tidal Board
Barren Island Point
Honga
Clay Point
Gunners Island
ADAMS RD
Gunners Cove
Barren Island Thorofare
BALL PARK RD
Upper Hooper Island
Great Cove
Docs Point
Long Cove
Opossum Island
HOOPERS ISLAND RD
CREIGTON RD
Nans Point
LODGE HALL RD
Barren Island
Tom Point
CANNON RD
Whitewood Cove
Flowers Cove
FLOWERS RD
Old House Point
Back Creek
Horse Point
HORSE POI
HOOPER
Sand Point
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APPENDIX A

VISUAL-MANUAL CLASSIFACTIONS

VISUAL-MANUAL CLASSIFICATION

(Test method: ASTM D 2488)

PROJECT: Dorchester County, MD DATE: Mar 2003

AREA: Honga River/Tar Bay CLASSIFIED BY: KLHN

SAMPLE NO.	DEPTH (ft)	VISUAL CLASSIFICATION	SYMBOL
TB-1			
JAR-1	0.0-1.5	Wet dk grayish brn poorly graded fine sand w/ silt	(SP-SM)
-2	1.5-3.0	Wet grayish brown -ditto-	(SP-SM)
-3	3.0-4.5	Wet grayish brown silty v. fine sand	(SM)
-4	4.5-6.0	Wet lt. olive brown sandy silt	ML/SM
-5	6.0-6.7	Wet yellowish brown silty med. sand	(SM)
-6	6.7-7.5	Wet gray soft elastic silt	MH/CL
-7	7.5-9.0	-ditto-	MH/CL
TB-2			
JAR-1	0.0-1.5	Wet black v. soft silt	ML/CL
-2	1.5-3.0	Wet dk gray soft silt	ML/CL
-3	3.0-4.5	Wet dk gray soft lean clay	(CL)
-4	4.5-6.0	V. moist olive silty fine sand	(SM)
-5	6.0-7.5	Moist lt. gray + olive brn. firm lean clay	(CL)
-6	7.5-9.0	Moist lt. gray + olive silty fine sand	(SM)
TB-3			
Small Sample JAR-1	0.0-1.5	Wet dk gray v. soft silt	(ML)
-2	1.5-3.0	Wet black v. soft elastic silt	(MH)
-3	3.0-4.5	-ditto-	(MH)
-4	4.5-6.0	Wet dk gray v. soft fat clay w/ shells	(CH)
-5	6.0-7.5	-ditto-	(CH)

VISUAL-MANUAL CLASSIFICATION

(Test method: ASTM D 2488)

PROJECT: Dorchester County, MD DATE: Mar 2003

AREA: Honga River/Tar Bay CLASSIFIED BY: KUHN

SAMPLE NO.	DEPTH(ft)	VISUAL CLASSIFICATION	SYMBOL
TB-4			
Small sample JAR-1	0.0 - 1.5	Wet dk gray silty v. fine sand (tr. shells)	(SM)
-2	1.5 - 3.0	— No SAMPLE —	—
-3	3.0 - 4.5	Wet black v. soft silt w/ sand	(ML)
-4	4.5 - 6.0	-ditto-	(ML)
-5	6.0 - 7.5	Wet dk gray v. soft fat clay	(CH)
TB-5			
JAR-1	0.0 - 1.5	Wet dk grayish brown silty v. fine sand (tr. grass)	(SM)
-2	1.5 - 3.0	Wet dk grayish brown sandy silt	(ML)
-3	3.0 - 4.5	Wet v. dk gray v. soft lean clay	(CL)
-4	4.5 - 6.0	-ditto-	(CL)
-5	6.0 - 7.5	Wet dk gray v. soft lean clay	(CL)
Small sample-6	7.5 - 8.3	-ditto-	(CL)
-7	8.3 - 9.0	Wet dk grayish brn clayey fine sand	SC/SM
TB-6			
JAR-1	0.0 - 1.5	Wet dk grayish brown silty v. fine sand	(SM)
-2	1.5 - 3.0	Wet v. dk gray v. soft silt w/ sand	(ML)
-3	3.0 - 4.5	Wet v. dk gray v. soft sandy silt	(ML)
-4	4.5 - 6.0	Wet dk gray v. soft sandy silt (tr. shells)	(ML)
-5	6.0 - 7.5	Wet olive brown Silty fine sand	(SM)
-6	7.5 - 9.0	V. moist olive brown poorly graded fine sand w/ silt	(SP-SM)
-7	9.0 - 10.5	Wet dk yell. brown -ditto-	(SP-SM)

APPENDIX B

LABORATORY TEST RESULTS
&
GRAIN SIZE ANALYSIS

LABORATORY TEST RESULTS

PROJECT: Honga River/Tar Bay
AREA: Dorchester County, MD

DATE: Apr.2003

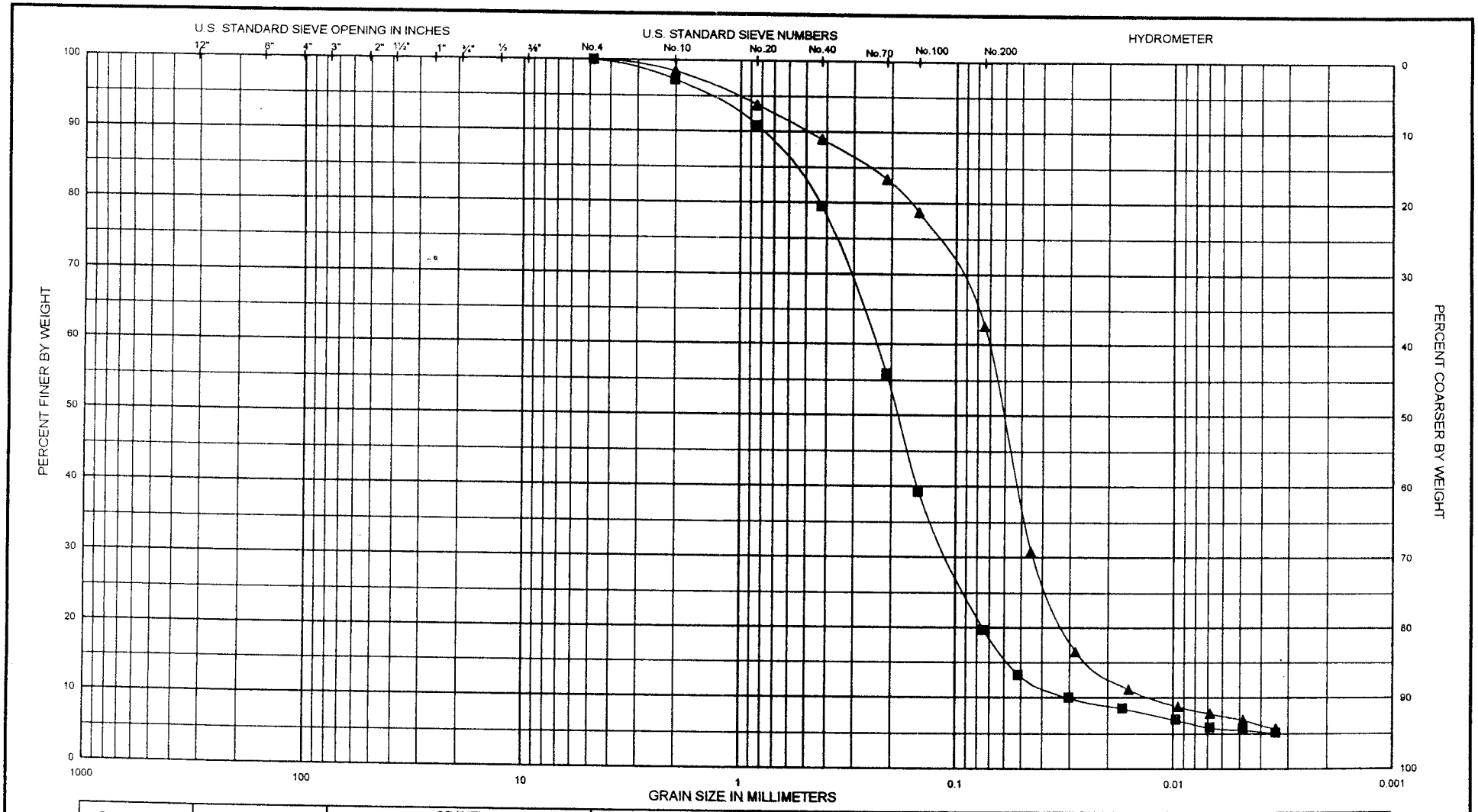
TEST: Natural Moisture Contents (ASTM D 2216), Specific Gravity of Soil Solids by Water Pycnometer (ASTM D 854) & Organic Contents (ASTM D2974 - Method C)

Hole No.	Sample No.	Depth (ft.)	Moisture Content, %	Specific Gravity, G_s	L.O.I., %	Classification
TB-1	Jar-2	1.5-3.0	19.8	2.62	0.9	Inorganic
TB-1	Jar-4	4.5-6.0	26.1	2.64	1.0	Inorganic
TB-2	Jar-3	3.0-4.5	22.2	2.61	1.8	Inorganic
TB-3	Jar-3	3.0-4.5	40.8	2.66	2.8	Inorganic
TB-3	Jar-4	4.5-6.0	46.9	2.69	3.9	Inorganic
TB-4	Jar-3	3.0-4.5	39.1	2.66	3.1	Inorganic
TB-5	Jar-3	3.0-4.5	49.8	2.57	3.6	Inorganic
TB-6	Jar-7	9.0-10.5	27.5	2.63	1.0	Inorganic

TEST: Natural Moisture Contents (ASTM D 2216) & Atterberg Limits (ASTM D 4318)

Hole No.	Sample No.	Depth (ft.)	Moisture Content, %	LL	PL	PI	Classification	Symbol
TB-1	Jar-2	1.5-3.0	19.8		N.P.		(ML)	Silt
TB-1	Jar-4	4.5-6.0	26.1		N.P.		(ML)	Silt
TB-2	Jar-2	1.5-3.0		35	23	12	(CL)	Lean clay
TB-2	Jar-3	3.0-4.5	22.2	23	15	8	(CL)	Lean clay
TB-3	Jar-3	3.0-4.5	40.8	30	22	8	(CL)	Lean clay
TB-3	Jar-4	4.5-6.0	46.9	41	22	19	(CL)	Lean clay
TB-4	Jar-3	3.0-4.5	39.1	31	23	8	(ML)	Silt
TB-5	Jar-3	3.0-4.5	49.8	41	22	19	(CL)	Lean clay
TB-6	Jar-7	9.0-10.5	27.5		N.P.		(ML)	Silt

Note: The Atterberg Limits test is only performed on minus No. 40 material portion of a sample and does not represent the entire sample. Refer to the Visual Classification or the Gradation Analysis for the complete classification.



Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)	Nat w%	LL	PL	PI
■	Jar-2	1.5-3.0	Silty sand (SM)	19.8		N.P.	
	"	"	* L.O.I. = 0.9% - Inorganic				
▲	Jar-4	4.5-6.0	Sandy silt (ML)	26.1		N.P.	
	"	"	* L.O.I. = 1.0% - Inorganic				

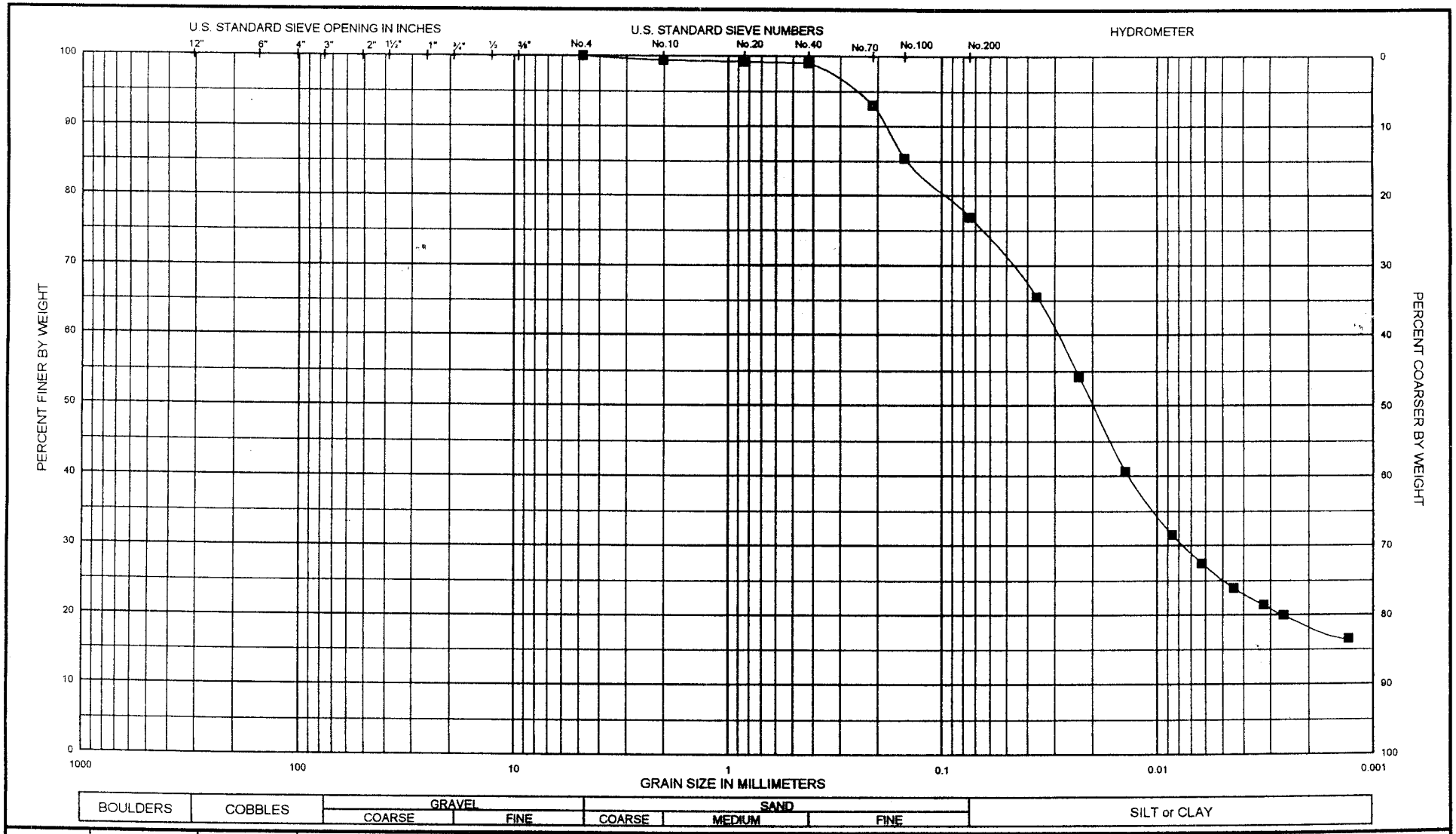
ENG FORM 2087 **GRADATION CURVES** (Sieve Analysis: ASTM D422)

PROJECT: Honga River/Tar Bay

AREA: Dorchester County, MD

Boring No.: TB-1

DATE: Apr 2003



Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)		Nat w%	LL	PL	PI
—■—	Jar-3	3.0-4.5	Lean clay with sand	(CL)	22.2	23	15	8
	"	"	* L.O.I. = 1.8% - Inorganic					

PROJECT: Honga River/Tar Bay

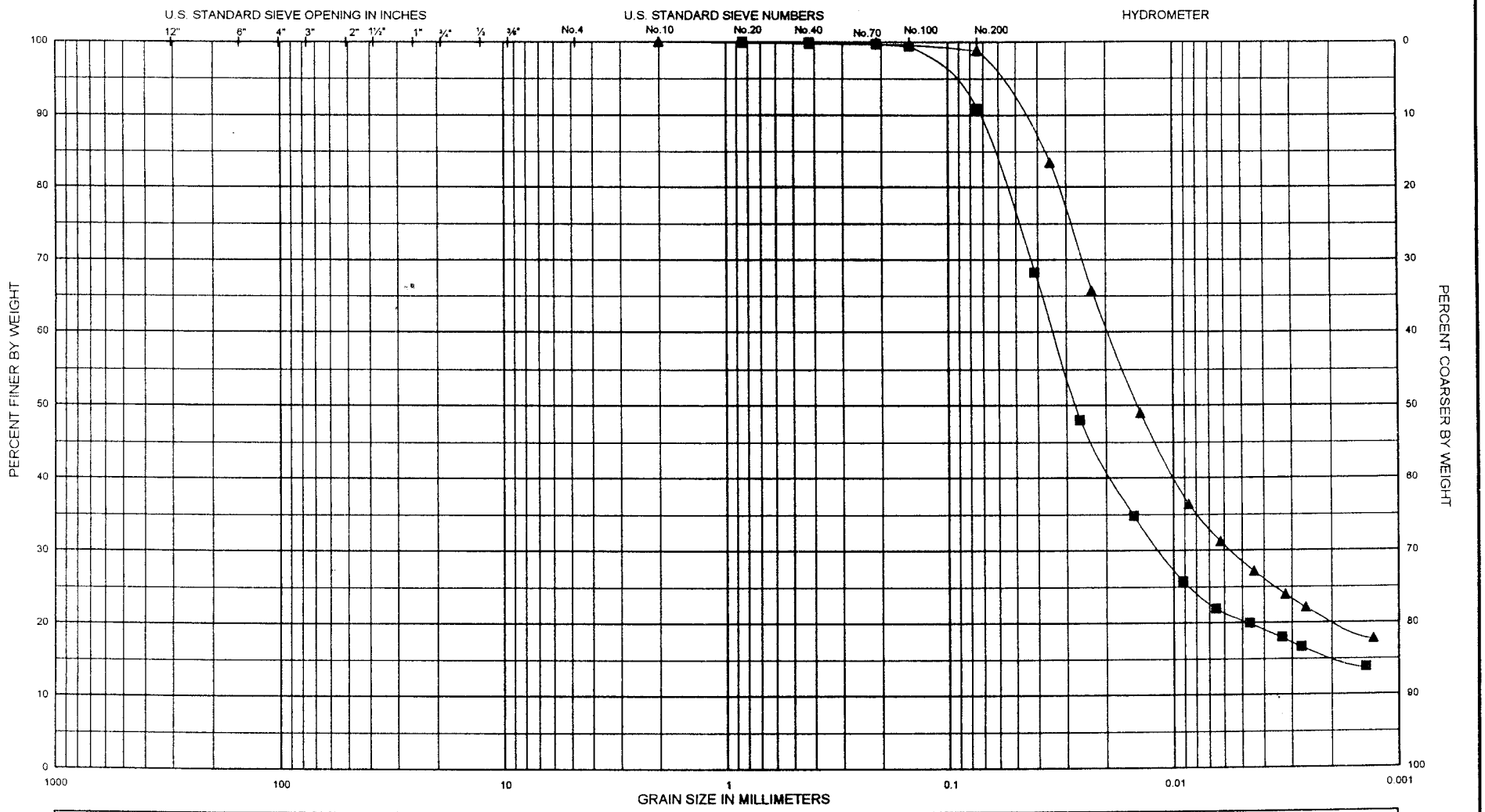
AREA: Dorchester County, MD

Boring No.: TB-2

DATE: Apr 2003

ENG FORM 2087

GRADATION CURVES (Sieve Analysis: ASTM D422)



Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)		Nat w%	LL	PL	PI
—■—	Jar-3	3.0-4.5	Lean clay (tr. sand)	(CL)	40.8	30	22	8
	"	"	* L.O.I. = 2.8% - Inorganic					
—▲—	Jar-4	4.5-6.0	Lean clay (tr. sand)	(CL)	46.9	41	22	19
	"	"	* L.O.I. = 3.9% - Inorganic					

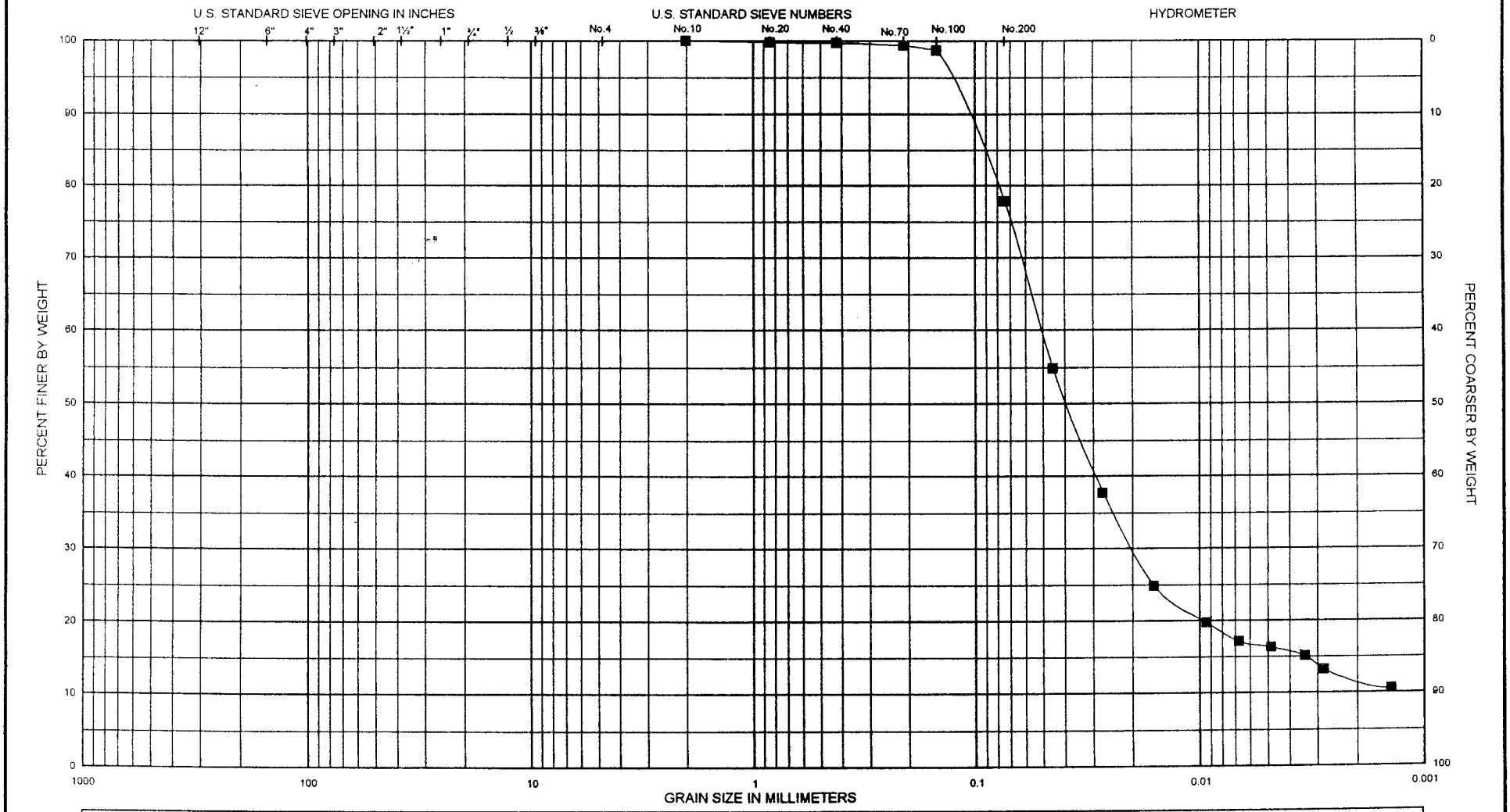
PROJECT: Honga River/Tar Bay

AREA: Dorchester County, MD

Boring No.: TB-3

DATE: Apr 2003

ENG FORM 2087 **GRADATION CURVES** (Sieve Analysis: ASTM D422)



Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)	Nat w%	LL	PL	PI
—■—	Jar-3	3.0-4.5	Silt with sand (ML)	39.1	31	23	8
	"	"	* L.O.I. = 3.1% - Inorganic				

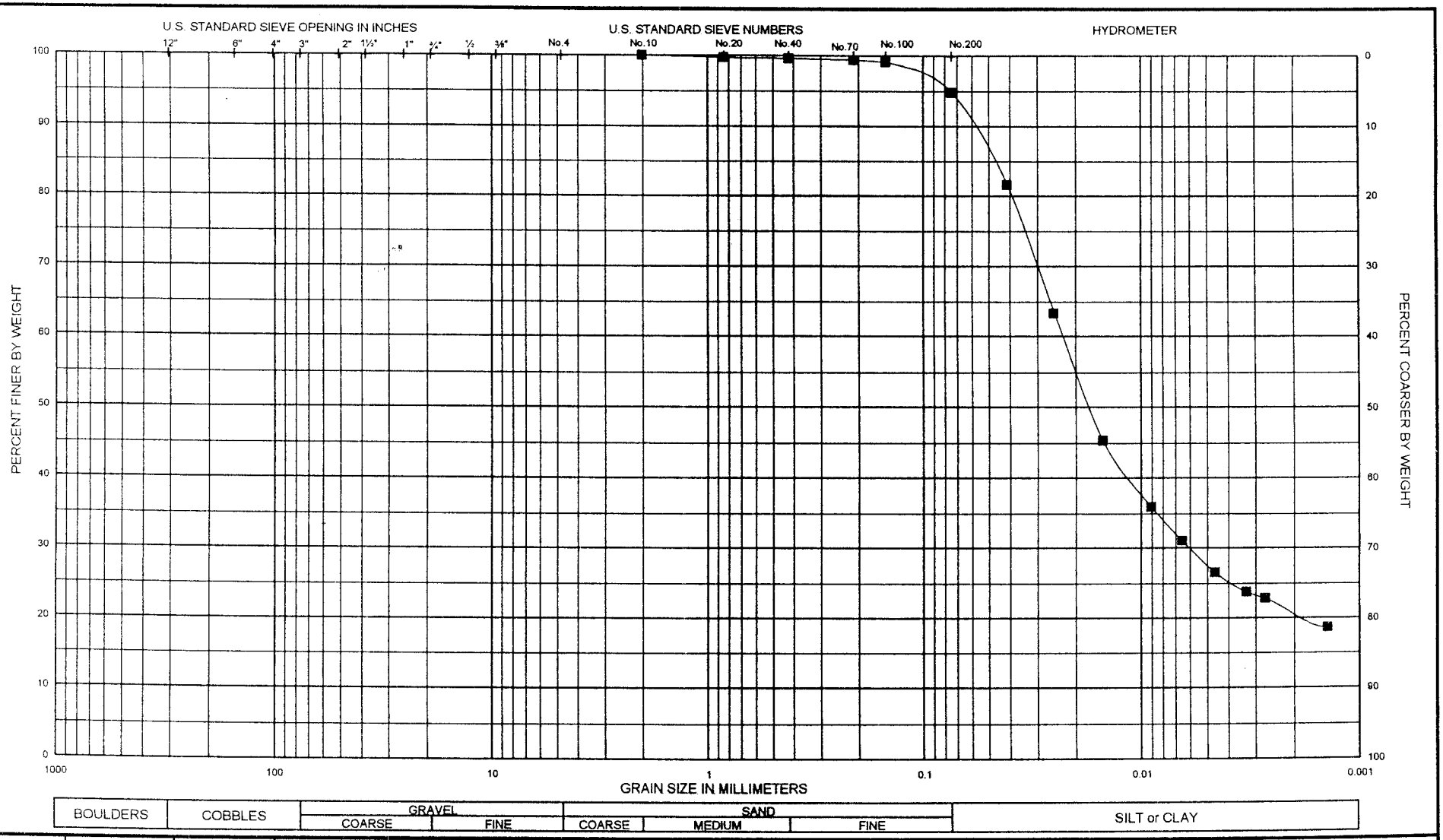
PROJECT: Honga River/Tar Bay

AREA: Dorchester County, MD

Boring No.: TB-4

DATE: Apr 2003

ENG FORM 2087 **GRADATION CURVES** (Sieve Analysis: ASTM D422)



Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)		Nat w%	LL	PL	PI
—■—	Jar-3	3.0-4.5	Lean clay (tr. sand)	(CL)	49.8	41	22	19
	"	"	* L.O.I. = 3.6% - Inorganic					

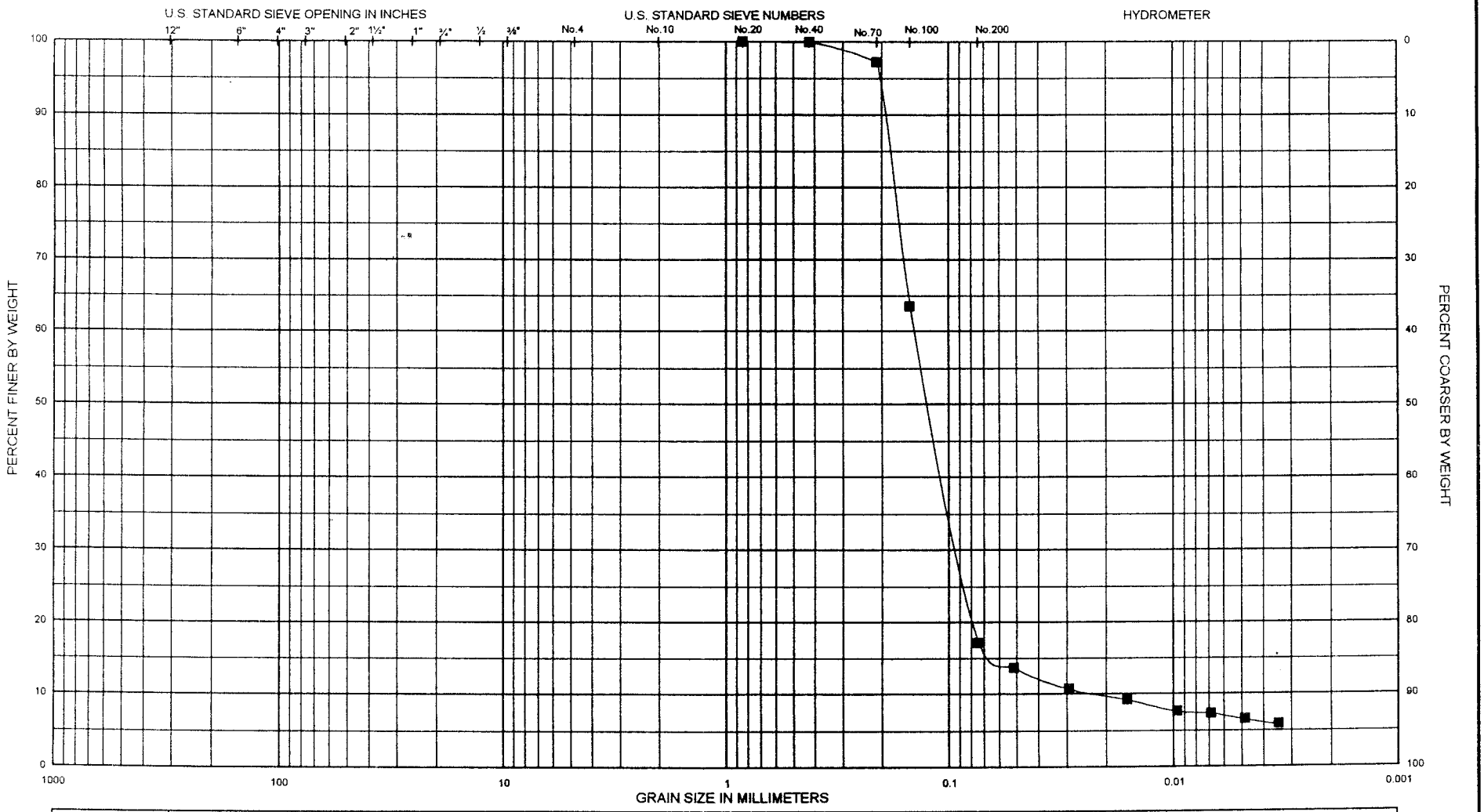
PROJECT: Honga River/Tar Bay

AREA: Dorchester County, MD

Boring No.: TB-5

DATE: Apr 2003

ENG FORM 2087 **GRADATION CURVES** (Sieve Analysis: ASTM D422)



Legend	Sample No.	Depth (ft)	USCS Classification (ASTM D2487)	Nat w%	LL	PL	PI
—■—	Jar-7	9.0-10.5	Silty sand (SM)	27.5		N.P.	
	"	"	* L.O.I. = 1.0% - Inorganic				

PROJECT: Honga River/Tar Bay

AREA: Dorchester County, MD

Boring No.: TB-6

DATE: Apr 2003

ENG FORM 2087 **GRADATION CURVES** (Sieve Analysis: ASTM D422)

APPENDIX C

FIELD NOTES & FIELD BORING LOGS

Hole No. TB-1

DRILLING LOG

DIVISION: N. ATLANTIC
INSTALLATION: Baltimore District
SHEET 1 OF 1 SHEETS

1. PROJECT: HONGA Rv/TAR Bay
2. LOCATION (Coordinates or Station): Dorchester County, MD.
3. DRILLING AGENCY: CENAB-EN-GG
4. HOLE NO. (As shown on drawing title and file number): TB-1
5. NAME OF DRILLER: Albert McNamara
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 9.0'
8. DEPTH DRILLED INTO ROCK:
9. TOTAL DEPTH OF HOLE: 9.0'
10. SIZE AND TYPE OF BIT: 2¼" Augers
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Acker
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 6 / UNDISTURBED —
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 3-21-03 / COMPLETED 3-21-03
17. ELEVATION TOP OF HOLE: —
18. TOTAL CORE RECOVERY FOR BORING: —
19. SIGNATURE OF INSPECTOR: William J. Merrill

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f
	0–1		TAN, Silty SAND with Trace Shells & Organics	53%	J-1
	1–2		Tan & Grey Mottled Silty SAND with Gravel	53%	J-2
	2–3		Tan & Grey Mottled Sandy SILT with Gravel	53%	J-3
	3–4		Tan & Grey Mottled Silty SAND with Gravel	67%	J-4
	4–5		Tan Silty SAND with Gravel	27%	J-5
	5–6		Grey Silty CLAY	73%	J-6
	6–7		Grey Silty SAND	100%	J-7
	7–8		BOH 9.0'		
	8–9				
	9–10				
	10–11				
	11–12				
	12–13				
	13–14				
	14–15				
	15–16				
	16–17				
	17–18				
	18–19				

REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g

Hole was drilled using Acker Tripod Rig on a barge. Hole opened with 2¼" Hollow stem augers. Sample retreived using 1⅜" split spoon. Blow count conducted with a 140lb. drop hammer with a 30" drop. Count for 6" advance for total of 18".

GPS Coodinates
N 38° 20' 54.2"
W 076° 15' 54.3"
Accuracy 10.0'

WATER DEPTH:
START — 8.0'
STOP — 8.3'

Adjusted mean, mean, Low Tide at start is 5.7' of water.

Tide Gauge @ 0730 – +2.3'
Tide Gauge @ 1830 – +2.4'

Jar	Blow Count	Rec	Pen.
1	2-3-5	.8	.25-.25-.25
2	5-7-8	.8	0-0-.25
3	4-5-6	.8	.5-.5-.5
4	5-7-7	1.0	.25-.25-.25
5	6-3-2	.3	—
6	6-3-2	.8	.5-.5-.5
7	1-1-1	1.5	.25-.25-.25

Hole started: 0817
Hole stopped: 0845

PRELIMINARY INSPECTOR'S LOG CLASSIFICATION NOT FINAL

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT: HONGA Rv/TAR BAY
HOLE NO. TB-1

Hole No. TB-2

DRILLING LOG	DIVISION: N. Atlantic	INSTALLATION: Baltimore District	SHEET 1 OF 1 SHEETS

1. PROJECT: HONGA RV / TAR BAY
2. LOCATION (Coordinates or Station): Dorchester County, MD.
3. DRILLING AGENCY: CENAB-EN-GG
4. HOLE NO. (As shown on drawing title and file number): TB-2
5. NAME OF DRILLER: Albert McNamara
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 9.0'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 9.0'
10. SIZE AND TYPE OF BIT: 2¼" Augers
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Acker
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 6 / UNDISTURBED —
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: —
16. DATE HOLE: STARTED 3-21-03 / COMPLETED 3-21-03
17. ELEVATION TOP OF HOLE: —
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: William J. Merrill

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	1		Tan & Grey CLAY	100%	J-1	Hole was drilled using Acker Tripod Rig on a barge. Hole opened with 2¼" Hollow stem augers. Sample retreived using 1⅜" split spoon. Blow count conducted with a 140 lb. drop hammer with a 30" drop. Count for a 6" advance for a total of 18".
	2		Grey CLAY	100%	J-2	
	3		Greenish Grey Clean SAND Weakly Mottled	100%	J-3	
	4					
	5		Tan Silty SAND with Rusted Metal Chips	87%	J-4	
	6		Tan too Grey Silty SAND	73%	J-5	GPS Coordinates N 38°20'51.4" W 076°15'35.5" Accuracy 15.0'
	7					
	8		Tan Mottled SAND with Ironite	100%	J-6	WATER DEPTH: Start: 6.2' Stop: 6.0' — Adjusted mean mean low tide at start is 3.9' of water
	9		BOH 9.0'			Tide Gauge @ 0730 -42.3' Tide Gauge @ 1830 - +2.4'
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					

Jar	Blow Count	Rec	Pen
1	WR/10'-WH/5'	1.5	—
2	WH/1.5'	1.5	—
3	1-2-4	1.5	1.25-2.25-1.25
4	2-9-4	1.3	1.5-2.5-1.5
5	3-6-11	1.1	2.5-2.5-3
6	5-6-3	1.5	>.25->.25->.25

Hole started: 0937
Hole stopped: 1028

PRELIMINARY INSPECTOR'S LOG CLASSIFICATION NOT FINAL

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT HONGA RV/ TAR BAY | HOLE NO. TB-2

Hole No. TB-3

DRILLING LOG

DIVISION: N. ATLANTIC
INSTALLATION: Baltimore District
SHEET 1 OF 1 SHEETS

1. PROJECT: HONGA RV/TAR BAY
2. LOCATION (Coordinates or Station): Dorchester County MD
3. DRILLING AGENCY: CENAB-EN-GG
4. HOLE NO. (As shown on drawing title and file number): TB-3
5. NAME OF DRILLER: Albert McNamara
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 7.5'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 7.5'
10. SIZE AND TYPE OF BIT: 2¼" auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Acker
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5 / UNDISTURBED —
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: —
16. DATE HOLE: STARTED 3-21-03 / COMPLETED 3-21-03
17. ELEVATION TOP OF HOLE: —
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: William J. Merrill

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	1		Tan & Grey Silty SAND	67%	J-1	Hole was drilled using Acker Tripod Rig on a barge. Hole opened with 2¼" Hollow Stem augers. Sample retrieved using 1⅜" Split-spoon. Blow count conducted with a 140 lb. drop hammer with a 30" drop. Count for a 6" advance for a total of 18".
	2		Tan & Grey Silty SAND with Trace shells	100%	J-2	
	3		Grey Silty CLAY	33%	J-3	
	4					
	5		Grey SILT with trace shells	100%	J-4	GPS Coordinates N 38° 20' 48.3" W 076° 15' 15.1" Accuracy 23.6'
	6		Grey CLAY with trace shells	100%	J-5	WATER DEPTH: START: 5.1' STOP: 6.3' — Adjusted mean mean low tide at start is 2.8' of water
	7					Tide Gauge @ 0730 - +2.3' Tide Gauge @ 1830 - +2.4'
	8		BOH 7.5'			
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					

Jar	Blow Count	Rec	Pen
1	WR/.5' - WH/1.0'	.1	—
2	1 - WH/1.0'	1.5	—
3	WH/1.5'	.5	—
4	WR/.1' - WH/.6'	1.5	.5-0-0
5	WH/.5' - WH/1.0'	1.5	—

Hole Start: 1038
Hole Stop: 1151

PRELIMINARY INSPECTOR'S LOG CLASSIFICATION NOT FINAL

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT: HONGA RV/Tar Bay
HOLE NO.: TB-3

Hole No. TB-4

DRILLING LOG	DIVISION: N. Atlantic Division	INSTALLATION: Baltimore District	SHEET 1 OF 1 SHEETS

1. PROJECT: HONGA Rv/TAR BAY
2. LOCATION (Coordinates or Station): Dorchester County, MD
3. DRILLING AGENCY: CENAB-EN-GG
4. HOLE NO. (As shown on drawing title and file number): TB-4
5. NAME OF DRILLER: Albert McNamara
6. DIRECTION OF HOLE: [x] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 7.5'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 7.5'
10. SIZE AND TYPE OF BIT: 2¼" Augers
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Acker
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED —
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: —
16. DATE HOLE: STARTED 3-21-03; COMPLETED 3-21-03
17. ELEVATION TOP OF HOLE: —
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: William J. Merrill

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	1		Tan & Grey Silty SAND with Grass & trace shells	13%	J-1	Hole was drilled using Acker Tripod Rig on a barge. Hole opened using 2¼" Hollow stem augers. Sample retreived using 1⅜" split spoon. Blow count conducted with a 140 lb. drop hammer with a 30" drop. Count for 6" advance for a total of 18".
	2		2 tries, NO SAMPLE RETREIVED		J-2	
	3		Grey to Black SILT Pungent Smell	100%	J-3	
	4					
	5		Grey to Black SILT	100%	J-4	GPS Coordinates N 38° 20' 45.3" W 076° 14' 58.9" Accuracy 18.4'
	6					WATER DEPTH: START: 5.7' STOP: 6.3' — Adjusted mean mean low tide at start is 3.4' of water
	7		Black & Greenish Grey SILT	100%	J-5	
	8		BOH 7.5'			Tide Gauge @ 0730 - +2.3' Tide Gauge @ 1830 - +2.4'
	9					
	10					

Jar	Blow Count	Rec.	Pen.
1	WR/.5' - 1-1	1.2	—
2	WH/1.5'	—	—
3	WR/.5' - WH/1.0'	1.5	0-.25-0
4	WR/.9' - WH/.6'	1.5	.5-0-0
5	WR/.9' - WH/.6'	1.5	—

Hole start: 1225
Hole stop: 1303

PRELIMINARY INSPECTOR'S LOG CLASSIFICATION NOT FINAL

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT: HONGA RV/TAR BAY | HOLE NO.: TB-4

Hole No. TB-5

DRILLING LOG

DIVISION: N. ATLANTIC

INSTALLATION: Baltimore District

SHEET 1 OF 1 SHEETS

1. PROJECT: HONGA Rv / TAR BAY
2. LOCATION (Coordinates or Station): Dorchester County, MD
3. DRILLING AGENCY: CENAB-EN-GG
4. HOLE NO. (As shown on drawing title and file number): TB-5
5. NAME OF DRILLER: Albert McNamara
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 9.0'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 9.0'
10. SIZE AND TYPE OF BIT: 2¼" Augers
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Acker
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7; UNDISTURBED —
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: —
16. DATE HOLE: STARTED 3-21-03; COMPLETED 3-21-03
17. ELEVATION TOP OF HOLE: —
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: William J. Merrito

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	1		Greenish Grey SILT with grass	Clam Bucket	J-1	Hole was drilled using Acker Tripod Rig on a barge, Hole drilled using 2¼" Hollow stem augers. Sample retrieved using 1⅜" split spoon. Blow count conducted using 140 lb. drop hammer with 30" drop. Count for 6" advance for a total of 18".
	2		Greenish Grey to Blackish Grey CLAY	100%	J-2	
	3		Greenish Grey to Blackish Grey CLAY	100%	J-3	
	4					
	5		Greenish Grey to Blackish Grey CLAY with trace shells	100%	J-4	GPS Coordinates N 30° 20' 43.6" W 76° 14' 44.1" Accuracy 20.1'
	6		Greenish Grey to Blackish Grey CLAY with trace shells	67%	J-5	WATER DEPTH: Start: 5.9' Stop: 6.2' — Adjusted mean mean low tide at start is 3.6' of water
	7					
	8		Blackish Grey CLAY	23%	J-6	Tide Gauge @ 0730 - +2.3'
			Greenish Grey SAND	77%	J-7	Tide Gauge @ 1830 - +2.4'
	9		BOH 9.0'			
	10					

Jar	Blow Count	Rec.	Pen.
1	1-1-1	Clam Bucket	—
2	WH/1.5'	1.5	—
3	WH/1.5'	1.5	—
4	WR/.5 - WH/1.0	1.5	.25-0-0
5	WR/.5 - WH/1.0	1.0	—
6	WR/.5 - 2 - 6	.3	—
7	11	1.0	.5-.25-.5

Hole started: 1339
Hole stopped: 1427

PRELIMINARY INSPECTOR'S LOG CLASSIFICATION NOT FINAL

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT: HONGA Rv / TAR BAY — HOLE NO. TB-5

Hole No. TB-6

DRILLING LOG | DIVISION: N. ATLANTIC | INSTALLATION: Baltimore District | SHEET 1 OF 1 SHEETS

1. PROJECT: HONGA Rv / TAR BAY
2. LOCATION (Coordinates or Station): Dorchester County, MD
3. DRILLING AGENCY: CENAB-EN-GG
4. HOLE NO. (As shown on drawing title and file number): TB-6
5. NAME OF DRILLER: Albert McNamara
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 10.5
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 10.5
10. SIZE AND TYPE OF BIT: 2¼" AUGERS
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Acker
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7 | UNDISTURBED —
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: —
16. DATE HOLE: STARTED 3-21-03 | COMPLETED 3-21-03
17. ELEVATION TOP OF HOLE: —
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: William J. Merritt

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f
	0–1		Greenish Grey SILT with Grass	Clam Bucket	J-1
	1–2		Grey SILT with Trace Shells	27%	J-2
	2–4		Grey SILT with trace Shells	60%	J-3
	4–5		Grey SILT with trace Shells	100%	J-4
	5–7		Greenish Grey SAND	100%	J-5
	7–8		Greenish Grey SAND	53%	J-6
	8–10		Orange to Tan SAND Weakly Mottled	73%	J-7
	10–10.5		BOH 10.5'		

REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)

Hole was drilled using Acker Tripod Rig on a barge. Hole opened using 2¼" Hollow Stem Augers. Sample retrieved using 1⅜" split spoon. Blow Count conducted using 140lb. drop hammer with 30" drop. Count for 6" advance for a total of 18".

GPS Coordinates
N 38° 20' 40.1"
W 76° 14 20.8"
Accuracy 18.1"

WATER DEPTH:
START: 4.0
STOP: 5.9

Adjusted mean mean low tide at start is 1.7' of water.

Tide Gauge @ 0730 – +2.3'
Tide Gauge @ 1830 – +2.4'

Jar	Blow Count	Rec.	Pen.
1	WR/.5' - WH/.5' - 1	Clam Bucket	—
2	WR/.5' - WH/1.0'	.4	.5-0-0
3	WR/.5' - WH/1.0'	.9	.25-.25-.25
4	WR/.5' - WH/1.0'	1.5	—
5	WH/.5' - 4-2	1.5	.25-.25-.25
6	1-2-2	.8	.5-.5-.5
7	2-1-2	1.1	.25-.5-0

Hole started: 1506

Hole stopped: 1600

PRELIMINARY INSPECTOR'S LOG CLASSIFICATION NOT FINAL

High tide - 1632 → +1.2'

Low tide - 2218 → -.1'

3-21-03

HONGA RV - TAR BAY

OUT: 7:15

Tide out: 7:30 - 2.3'

Many

Many

~~waypoints~~

~~HR-1~~ ENTER

WAY POINTS

ENTER

HR-?

ENTER

← GOTO

ENTER

Depth: - 10.0'

Tide - 2.0

Range 8.0'

WATER Depth

8.0

+ 2.3

5.7 → = ϕ depth

PRELIMINARY INSPECTOR'S LOG CLASSIFICATION NOT FINAL

3-21-03

HR-1

START 8:17

Stop 8:45

Albert McNamara : driller

Depth	Jar	BC	Rec	Pen	Description
0-1.5	J-1	2-3-5	.8'	.25-.25-.25	Silty SAND, Tan trace shell & organics
Top of Mud -5.6'					
1.5-3.0	J-2	5-7-8	.8	0-0-.25	TAN, Grey, Mottled Silty SAND with gravel
3-4.5	J-3	4-5-6	.8	.5-.5-.5	Tan, grey, mottled SANDY SILT, with gravel - pebbles
4.5-6.0	J-4	5-7-7	1.0	.25-.25-.25	Tan, grey, mottled Silty SAND w/ gravel
6.0-7.5	J-5	6-3-2	.3	.5-.5-.5	Tan, Silty SAND w/ gravel
	J-6		.8	↓	Grey, Silty clay
7.5-9.0	J-7	1-1-1	1.5	.25-.25-.25	Grey, Silty SAND
9.0-10.5					WATER Depth 1: 8.0'
					WATER Depth 2: 8.3'
10.5-11.00					

N 58° 20' 54.2"

W 76° 15' 54.3"

Elev. ± 60'

High tide - 1632 → +1.2'
Low tide - 2218 → -.1'
3-21-03
HONGA Rv - TAR BAY

OUT: 7:15
Tide out: 7:30 - 2.3'

Menu
Menu
~~W~~ points
~~HR-1~~ ENTER
WAY POINTS
ENTER
HR-?
ENTER
← GOTO
ENTER

Depth: - 10.0'
Tide - 2.0
Barge 8.0'
WATER Depth

8.0
+2.3
5.7 → = 0 depth

3-21-03
HR-1
START 8:17
Stop 8:45
Albert McNamara / Miller

x 38°20'54.2"
wc 76°15'54.3"
Acc. ± 10'

Depth	Jar	BC	Rec	Pen	Discription
0-1.5	J-1	2-3-5	.8'	.25-.25-.25	Silty SAND, Tan, Trace shell & organics
Top of Mud -5.6'					
1.5-3.0	J-2	5-7-8	.8	0-0-.25	TAN, Grey, [illegible] Silty SAND with gravel
3-4.5	J-3	4.5-6	.8	.5-.5-.5	Tan [illegible] SANDY SILT w[illegible] gravel [illegible]
4.5-6.0	J-4	5-7-7	1.0	.25-.25-.25	tan, grey, mottled Silty SAND [illegible] gravel
6.0-7.5	J-5	6-3-2	.3	.5-.5-.5	Tan, Silty SAND & gravel
	J-6		.8	↓	Grey, Silty clay
7.5-9.0	J-7	1-1-1	1.5	.25-.25-.25	Grey, Silty SAND
9.0-10.5					
10.5-12.00					

WATER Depth 1: 8.0'
WATER Depth 2: 8.3'

PRELIMINARY INSPECTOR'S LOG CLASSIFICATION NOT FINAL

HR-2 START - 0937

3-21-03 STOP - 1028

GPS-

N 38° 20' 51.4"

W 76° 15' 35.5"

Acc- ±15.0'

Top = 8.2'

Water = 6.2' - 9.37

- 2.3

3.9' MWLT

Sta - 6.2

STOP 6.2

Depth	Jar	BC	Rec	Pen	Disc	
0-1.5	1	WR/18" - WH/15"	1.5	—	Grey - TAN	Clay Top .2
1.5-3.0	2	WH/165'	1.5	—	Grey	Clay
3.0 4.5	J-3	2-2-4	1.25-2.25-1.25 → 1.5		Greenish Weakly mottled	Grey ~~S / Cl~~ Clayey Sand
4.5-6.0	J-4	2-9-4	1.3	1.5-2.5-.5	TAN with	Silty Sand Rusted metal
6.0-7.5	J-5	3-6-11	1.1	2.5-3.5 3.0	Tan-brey	Silty Sand
7.5-9.0	J-6	5-6-3	1.5	2.5-2.25 2.25	Mottled	TAN SAND w ~~Iron~~ - Iron
9.0-10.5						
10.5-12.00						

PRELIMINARY INSPECTOR'S LOG CLASSIFICATION NOT FINAL

HR-2 START - 0937

3-21-03 Stop - 1028

GPS -
N 38°20' 51.4"
W0 76°15' 35.5"
Acc - ±15.0'

Top = 8.2"
Water = 6.2" - 9:37
- 2.3
3.9' mm LT

Start - 6.2
Stop 6.0

Depth	Jar	BC	Rec	Pen	Disc.
0-1.5	1	WR/1.0' - WH/.5'	1.5	—	Grey - TAN Clay. Top .2
[illegible].0	2	WH/1.5'	1.5	—	Grey Clay
3.0-4.5	J-3	~~1-2~~-4	1.25-2.25 1.25 → 1.5		Greenish Grey ~~S... Cl~~ Clean Sand weakly mottled
4.5-6.0	J-4	2-9-4	1.3	1.5-2.5 .5	TAN Silty SAND with Rusted metal
6.0-7.5	J-5	3-6-11	1.1	2.5-3.5 3.0	Tan-Grey Silty SAND
7.5-9.0	J-6	5-6-3	1.5	7.25- 7.25 7.25	Mottled TAN SAND w ~~Ironite~~ - Ironite
9.0-10.5					
10.5-12.00					

PRELIMINARY INSPECTOR'S LOG CLASSIFICATION NOT FINAL

H-3 3-21-03

START: 1038

STOP: 1051

Top Barge 7.1'
Top water 5.1'
- 2.3
2.8'

Depth	Sal	BC	Rec	Pen	Disc.
0-1.5	1	WR/.5 - WH/1.0	.1	—	Tan-Grey Silty Clay
1.5-3.0	2	WH/1.0	1.5	—	Tan-Grey Sandy Silt with Trace Shells
3.0-4.5	3	WH/1.5	.5	—	Silty Grey Silty Clay
4.5-6.0	4	~~WH~~ WR/.9 - WH/.6	1.5	.5-0-0	Grey Silt with trace shells
6.0-7.5	5	WH/.5	↓	~~0~~	Grey Clay with trace shells
7.5-9.0					

GPS-
N 38° 10' 48.3
W 76° 15' 15.1
Acc. 23.6'

Start 5.1'
Stop. 6.3'

PRELIMINARY
INSPECTOR'S LOG
CLASSIFICATION
NOT FINAL

H-3 3-21-03

START: 1038

STOP: 1151

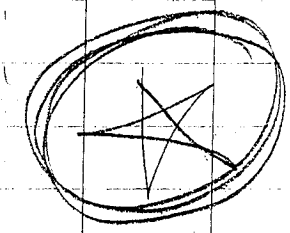
Top Barge 7.1'
Top water 5.1'
- 2.3
2.8'

Depth	Jar	BC	Rec	Pen	Disc.
0-1.5	1	WR .5 / WH 1.0	.1	—	Tan-Grey Silty Clay
1.5-3.0	2	WH 1.0	1.5	—	Tan-Grey Sandy Silt with Trace Shells
3.0-4.5	3	WH 1.5	.5	—	Grey Silty Clay
4.5-6.0	4	WR .9 / WH .6	1.5	.5-0	Grey Silt with Trace Shells
6.0-7.5	5	WH .5			Grey Clay with Trace Shells
7.5-9.0					

GPS-
N 38° 30' 48.3
W 76° 15' 15.1
Acc. 23.6'

PRELIMINARY
INSPECTOR'S LOG
CLASSIFICATION
NOT FINAL

Start 5.1'
Stop 6.3'



5-15-03 H-4

Start: ~~1025~~ 1225 – 3.4'

Stop: 1303 – 4.0'

5.70
-2.3
3.4'

	S	Bc	Rec	Pen	D.'s
0-1.5	1	WR/.5 WH/1.0	2	—	Tan – Grey Silty SAND w/ grass – trace shells
1.5-3.0	2	WH/1.5	—	—	2 tries – NO SAMPLE
3.0-4.5	3	WR/.5 WH/1.0	~~2~~ 1.5	0-.25-0	Grey-Black Silt, Pungent Smell
4.5-6.0	4	WR/.9 WH/1.0	1.5	.5-0-0	Black – Grey Silt
6.0-7.5	5	WR/.9 WH/.6	1.5	—	Black – ~~Grey~~ Greenish Grey – Silt

PRELIMINARY
INSPECTOR'S LOG
CLASSIFICATION
NOT FINAL

GPS-
N 38° 20' 45.0"
W 076° 14' 38.9"
Acc -18.4'

5-15-03 H-4

Start: ~~10:25~~ 12:25 – 3.4'

Stop: 1302 – 4.0'

5.70
-2.3
3.4'

	J	Bc	Rec	Pen	D.'s
0-1.5	1	WR/15 - 1-1	.2	—	Tan - Grey Silty SAND w/ grass - trace shells
1.5-3.0	2	Wt/1.5	—	—	2 tries - NO SAMPLE
3.0-4.5	3	WR/.5 - WH/1.0	~~.2~~ 1.5	0-.25-0	Grey-Black Silt, Pungent Smell
4.5-6.0	4	WR/.9 - WH/1.0	1.5	.5-0-0	Black - Grey Silt
6.0-7.5	5	WR/.9 - WH/.6	1.5	—	Black - ~~Grey~~ Greenish Grey - Silt

GPS-

N 38°20'45.9"

W076°14'38.9"

Acc -18.4'

PRELIMINARY
INSPECTOR'S LOG
CLASSIFICATION
NOT FINAL

03-21-03

~~H~~ H-5

START / 1339 — ~~7.6~~ 3.6'

STOP / 1427 — 3.9'

Depth	J	BC	Rec	Pen	Disc
0-1.5	1	1-1-1	Clam Bucket	—	Greenish Grey Silt w grass
1.5-3.0	2	WH 1.5	1.5	—	Greenish ~~Tan~~ — Blackish Grey Grey Clay
3.0-4.5	3	WH 1.5	1.5	—	SAME as J-2
4.5-6.0	4	WR .5 WH 1.0	1.5	.25-0-0	SAME AS J-2 w trace shells
6.0-7.5	5	WR .5 WH 1.0	1.0	—	SAME AS J-4
7.5-	6	WR .5-2-6	.3	—	~~SAME AS J~~ Black Grey - clay
	7		1.0	.5-.25-.5	Greenish Grey SAND

GPS-
N 50° 20' 43.6"
W 0 76° 14' 44.1"
Acc 20.1 M

5.9.0
- 2.3
3.6

6.2
- 2.3
3.9

PRELIMINARY
INSPECTOR'S LOG
VERIFICATION
NOT FINAL

03-21-03
H-5

START / 1339 — 3.6' / 7.0

STOP / 1427 — 3.9'

5.90 − 2.3 = 3.6

6.2 − 2.3 = 3.9

Depth	J	BC	Rec	Pen	Disc
0–1.5	1	1-1-1	Clam Bucket	—	Greenish Grey Silt w/ grass
1.5–3.0	2	WH / 1.5	1.5	—	Greenish ~~[illegible]~~ – Blackish Grey Grey Clay
3.0–4.5	3	WH / 1.5	1.5	—	SAME as J-2
4.5–6.0	4	WR / .5 – WH / 1.0	1.5	.25-0-0	SAME AS J-2 w/ Trace Shells
6.0–7.5	5	WR / .5 – WH / 1.0	1.0	—	SAME AS J-4
7.5–9.0	6	WR / .5 -2-6	.3	—	~~SAME AS J~~ Black Grey – Clay
	7		1.0	.5-.25-.5	Greenish Grey SAND

GPS –
N 30° 20' 43.6"
W 076° 14' 44.1"
Acc 20.1 ft

…MINARY
…S LOG
…CATION
…FINAL

Start: 1506 – 1.7
Stop: 1600 – 1.6

Depth	J	RC	Rec	PID	Disc
	1	WR .5 WH .5 – 1.0	Clam Bucket	—	Greenish Grey, Silt with Grass
5.0	2	WR WH	.4	.5-0-0	Grey Silt with trace shells
6.0 – 7.3	3	WR .5 WH 1.0	.9	.25-.25-.25	SAME AS J-2
7.5 – 6.0	4	WR .5 WH 1.0	1.5	—	SAME AS J2
6.0 – 7.5	5	WH .5 -4-2	1.5	.25-.25 .25	Greenish Grey SAND
7.5 – 9.0	6	1-2-2	.8	.5-.5-.5	SAME AS J-5
9.0 – 10.5	7	2-1-2	1.1	.25-.5-0	Mottled, orange TAN SAND

GPS
N 38° 20' 40.1"
W0 76° 14' 20.8"
Acc 18.1

6.0 – 2.3

4.0
-2.3
1.7
5.9
2.0
3.9
2.3
1.6

Tide IN
2.4
6:30 p.m.

Start: 1506 – 1.7
Stop: 1600 – 1.6

[illegible]	J	[illegible]	[illegible]	[illegible]	DISC
	1	WR .5 WH .5 – .1.0	Clam Bucket	—	Greenish Grey, Silt with Grass
5.0	2	WR WH 1.0	.9	.5-0-0	Grey Silt with trace shells
5.0 7.5	3	WR .5 WH 1.0	.9	.25-.25-.25	SAME AS J-2
7.5 [illegible]	4	WR .5 WH 1.0	1.5	—	SAME AS J-2
7.5	5	WH .5 -4-2	1.5	.25-.25 .25	Greenish Grey SAND
7.5 9.0	6	1-2-2	.8	.5-.5-.5	SAME AS J-5
9.0-10.5	7	2-1-2	1.1	.25-.5-0-	Mottled, orange → TAN SAND

GPS
N 38° 20' 40.1"
W0 76° 14' 20.8"
Acc 18.1

6.0 − 2.3
4.0 − 2.3 = 1.7
5.9 − 2.0 = 3.9
− 2.3 = 1.6

Tide [illegible]
2.4
6:30 p.m.

PRELIMINARY
INSPECTOR'S LOG
CLASSIFICATION
NOT FINAL

High tide - 1632 → + 1.2'

Low tide - 2218 → - .1'

3-21-03

HONGA RV - TAR BAY

3-21-03

HR-1

START 8:17

STOP 8:45

Albert McNamara

N 38°20' 54.2"

W 76°15' 54.3"

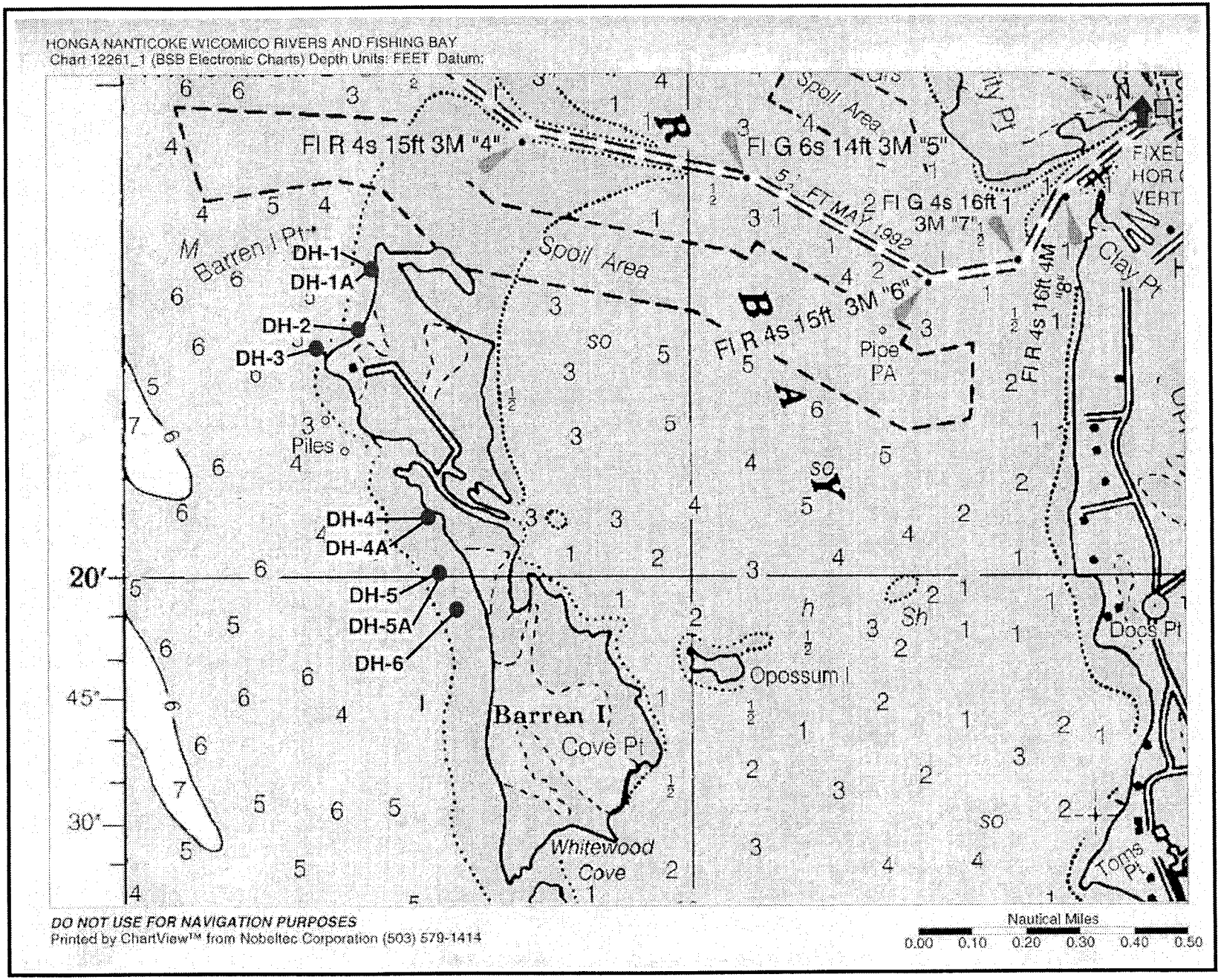
Acc. ± 10'

	Depth	Jar	BC	Rec	Pen	Description
OUT: 7:15	0-1.5	J-1	2-3-5	.8'	.25-.25-.25	Silty SAND, Tan trace shell & organics
Tide out: 7:30 - 2.3'	Top of Mud -5.6'					
	1.5-3.0	J-2	5-7-8	.8	0-0-.25	TAN, Grey, Mottled Silty SAND with Gravel
Menu	Depth: - 10.0'					
Menu	Tide: - 2.0	3-4.5	J-3	4-5-6	.8	.5-.5-.5	Tan, Grey, Mottled SANDY SILT, with gravel - pebbles
~~Way~~ points	Range 8.0'					
~~HR-1~~ ENTER		4.5-6.0	J-4	5-7-7	1.0	.25-.25-.25	tan, grey, mottled Silty SAND w/ gravel
WAY POINTS	WATER Depth					
ENTER	8.0	6.0-7.5	J-5	6-5-2	.3	.5-.5-.5	Tan, Silty SAND w/ gravel
HR-2	+ 2.3		J-6		.8		Grey, Silty Clay
ENTER	5.7 → = ϕ depth	7.5-9.0	J-7	1-1-1	1.5	.25-.25-.25	Grey, Silty SAND
← GoTo							
ENTER		9.0-10.5		WATER Depth 1: 8.0'			
				WATER Depth 2: 8.3'			
	10.5-11.00					

PRELIMINARY INSPECTOR'S LOG CLASSIFICATION NOT FINAL

ATTACHMENT 6

Subsurface Investigation – Breakwater Alignment


HONGA NANTICOKE WICOMICO RIVERS AND FISHING BAY
Chart 12261_1 (BSB Electronic Charts) Depth Units: FEET Datum:
Fl R 4s 15ft 3M "4"
Fl G 6s 14ft 3M "5"
Fl G 4s 16ft 3M "7"
Fl R 4s 15ft 3M "6"
Fl R 4s 16ft 4M "8"
5.2 FT MAY 1992
Spoil Area
Spoil Area
Barren I Pt
Clay Pt
DH-1
DH-1A
DH-2
DH-3
DH-4
DH-4A
DH-5
DH-5A
DH-6
Piles
Pipe
PA
20'
45'
30'
Barren I
Cove Pt
Whitewood
Cove
Opossum I
Docs Pt
Toms Pt
DO NOT USE FOR NAVIGATION PURPOSES
Printed by ChartView™ from Nobeltec Corporation (503) 579-1414
Nautical Miles
0.00 0.10 0.20 0.30 0.40 0.50

E2CR, Inc.

BORING LOG

PROJECT		PROJECT NO	BORING NO.
Honga River Sampling		03533-03	DH - 1

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Eastern Shore, Maryland	05/31/03	05/31/03		
COORDINATES:	DEPTH WATER ENC.	AT END DRILL	AT 24 HRS	CAVED DEPTH
N: 38° 20.638 W: 76° 15.805				
DRILLER	WEIGHT OF HAMMER	HEIGHT OF FALL	TYPE OF CORE	DEPTH OF BORING
J. Sies	140 lbs	30 inches		15
TYPE OF DRILL RIG & METHOD	DEPTH TO ROCK	LOGGED BY:		PAGE NO.
HSA		A. Ebrahimian		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA: SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0			Water						
2									
4									
6			Brownish to greenish gray, moist, Silty CLAY, little to some Sand (CL)						
8				S-1	24"	4- 4- 6- 6	DS	24"	
10									
12									
14				S-2	24"	3- 4- 5- 6	DS	24"	
			Gray, moist, Silty fine SAND						
16			Bottom of Boring @ 15.0 feet						
18									
20									
22									
24									
26									
28									
30									
32									
34									

E2CR, Inc.

BORING LOG

PROJECT			PROJECT NO.	BORING NO.
Honga River Sampling			03533-03	DH - 1A
SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Eastern Shore, Maryland	06/02/03	06/02/03		
COORDINATES: N: 38° 20.636 W: 76° 15.809	DEPTH WATER ENC.	AT END DRILL	AT 24 HRS	CAVED DEPTH
DRILLER	WEIGHT OF HAMMER	HEIGHT OF FALL	TYPE OF CORE	DEPTH OF BORING
J. Sies	140 lbs	30 inches		12
TYPE OF DRILL RIG & METHOD	DEPTH TO ROCK	LOGGED BY:		PAGE NO.
HSA		A. Ebrahimian		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA: SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0			Water						
2									
4									
6			Gray, light brown, moist, Silty CLAY, with thin layer of Silty fine SAND at bottom (CL)	S-1	24"	2- 3- 8	DS	15"	
8			Orange brown, gray, moist, Silty fine SAND (SM)	S-2	24"	4- 6- 8	DS		
10			Light brown fine to medium SAND (SP)	S-3	24"	4- 5- 5	DS	16"	
12			Bottom of Boring @ 12.0 feet						
14									
16									
18									
20									
22									
24									
26									
28									
30									
32									
34									

E2CR, Inc.

BORING LOG

PROJECT				PROJECT NO.	BORING NO.
Honga River Sampling				03533-03	DH - 2
SITE	BEGUN	COMPLETED	HOLE SIZE		GROUND ELEVATION
Eastern Shore, Maryland	05/31/03	05/31/03			
COORDINATES: N: 38° 20.511 W: 76° 15.862	DEPTH WATER ENC.	AT END DRILL	AT 24 HRS		CAVED DEPTH
DRILLER	WEIGHT OF HAMMER	HEIGHT OF FALL	TYPE OF CORE		DEPTH OF BORING
J. Sies	140 lbs	30 inches			12
TYPE OF DRILL RIG & METHOD	DEPTH TO ROCK	LOGGED BY:			PAGE NO.
HSA		A. Ebrahimian			1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA: SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0			Water						
2									
4			Grayish, light brown, moist, Clayey fine SAND, trace Clay (SC)	S-1	18"	6- 7- 8	DS	14"	
6			Grayish brown, moist, Sandy CLAY (CL)	S-2	18"	4- 5- 6	DS	14"	
8			Light orange brown, moist, Clayey fine SAND (SC)						
10			Light orange brown, moist, Silty fine SAND (SM)	S-3	24"	4- 8- 12- 15	DS	24"	
12				S-4	24"	10-12-13-20	DS	24"	
14			Bottom of Boring @ 12.0 feet						
16									
18									
20									
22									
24									
26									
28									
30									
32									
34									

E2CR, Inc.

BORING LOG

PROJECT	PROJECT NO.	BORING NO.
Honga River Sampling	03533-03	DH - 3

SITE	BEGUN	COMPLETED	HOLE SIZE	GROUND ELEVATION
Eastern Shore, Maryland	05/31/03	05/31/03		
COORDINATES:	**DEPTH WATER ENC.**	**AT END DRILL**	**AT 24 HRS**	**CAVED DEPTH**
N: 38° 20.476 W; 76° 15.955				
DRILLER	**WEIGHT OF HAMMER**	**HEIGHT OF FALL**	**TYPE OF CORE**	**DEPTH OF BORING**
J. Sies	140 lbs	30 inches		15
TYPE OF DRILL RIG & METHOD	**DEPTH TO ROCK**	**LOGGED BY:**		**PAGE NO.**
HSA		A. Ebrahimian		1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA: SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0			Water						
2									
4									
6			Gray, moist, Silty CLAY, little Silt (ML)	S-1	18"	4- 3 - 2	DS	6"	
8									
10				S-2	18"	WOH/18"	DS	18"	
				S-3	18"	2- 4- 6	DS	18"	
12			Gray, moist, Silty CLAY, Silty fine Sand at bottom (CL)						
14				S-4	18"	2- 2- 2	DS	18"	
16			Bottom of Boring @ 15.0 feet						
18									
20									
22									
24									
26									
28									
30									
32									
34									

E2CR, Inc.

BORING LOG

PROJECT: Honga River Sampling			PROJECT NO.: 03533-03	BORING NO.: DH - 4
SITE: Eastern Shore, Maryland	BEGUN: 05/30/03	COMPLETED: 05/30/03	HOLE SIZE:	GROUND ELEVATION:
COORDINATES: N: 38° 20.123 W: 76° 15.672	DEPTH WATER ENC.	AT END DRILL	AT 24 HRS	CAVED DEPTH
DRILLER: J. Sies	WEIGHT OF HAMMER: 140 lbs	HEIGHT OF FALL: 30 inches	TYPE OF CORE:	DEPTH OF BORING: 15
TYPE OF DRILL RIG & METHOD: HSA	DEPTH TO ROCK	LOGGED BY: A. Ebrahimian		PAGE NO.: 1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA: SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0			Water						
2									
4									
6			Brownish gray, very moist, Silty fine SAND, trace Shell fragments (SM)	S-1	18"	WOH/18"	DS	1"	
8			Brownish gray, very moist, Silty fine SAND, trace shell fragments (ML)	S-2	18"	WOR/18"	DS	½"	
10			Gray, moist, Silty CLAY (CL)	S-3	12"	WOH/18"	DS	12"	
12									
14			Gray, brown, moist, Silty CLAY, little fine Sand (CL)	S-4	18"	6- 8 -9	DS	18"	
16			Bottom of Boring @ 15.0 feet						
18									
20									
22									
24									
26									
28									
30									
32									
34									

E2CR, Inc.

BORING LOG

PROJECT				PROJECT NO.	BORING NO.
Honga River Sampling				03533-03	DH - 4A
SITE	BEGUN	COMPLETED	HOLE SIZE		GROUND ELEVATION
Eastern Shore, Maryland	06/02/03	06/02/03			
COORDINATES: N: 38° 20.125 W: 76° 15.667	DEPTH WATER ENC.	AT END DRILL	AT 24 HRS		CAVED DEPTH
DRILLER	WEIGHT OF HAMMER	HEIGHT OF FALL	TYPE OF CORE		DEPTH OF BORING
J. Sies	140 lbs	30 inches			8
TYPE OF DRILL RIG & METHOD	DEPTH TO ROCK	LOGGED BY:			PAGE NO.
HSA		A. Ebrahimian			1 OF 1

DEPTH	STRATA ELE / DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA: SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0			Water						
2									
4			Gray, orange brown, moist, Silty fine SAND, trace Silt (SM)	S-1	18"	2- 3- 4	DS	10"	
6									
8				S-2	18"	7- 9- 11	DS	18"	
10			Bottom of Boring @ 8.0 feet						
12									
14									
16									
18									
20									
22									
24									
26									
28									
30									
32									
34									

E2CR, Inc.

BORING LOG

PROJECT: Honga River Sampling			PROJECT NO.: 03533-03	BORING NO.: DH - 5
SITE: Eastern Shore, Maryland	BEGUN: 05/30/03	COMPLETED: 05/30/03	HOLE SIZE:	GROUND ELEVATION:
COORDINATES: N: 38° 20.015 W: 76° 15.645	DEPTH WATER ENC.:	AT END DRILL:	AT 24 HRS:	CAVED DEPTH:
DRILLER: J. Sies	WEIGHT OF HAMMER: 140 lbs	HEIGHT OF FALL: 30 inches	TYPE OF CORE:	DEPTH OF BORING: 15
TYPE OF DRILL RIG & METHOD: HSA	DEPTH TO ROCK:	LOGGED BY: A. Ebrahimian		PAGE NO.: 1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA: SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0			Water						
2									
4									
6			Light orange brown and gray, moist, Silty fine SAND (SM)	S-1	18"	2- 2- 4	DS	0"	
8				S-2	18"	5- 8- 9	DS	15"	
10				S-3	18"	5- 8- 9	DS	15"	
12									
14			Light orange brown and gray, moist, Silty fine SAND, with layers of Clayey Sand (SM-SC)	S-4	18"	5- 3- 2	DS	18"	
16			Bottom of Boring @ 15.0 feet						
18									
20									
22									
24									
26									
28									
30									
32									
34									

E2CR, Inc.

BORING LOG

PROJECT: Honga River Sampling			PROJECT NO.: 03533-03	BORING NO.: DH - 5A
SITE: Eastern Shore, Maryland	BEGUN: 06/02/03	COMPLETED: 06/02/03	HOLE SIZE:	GROUND ELEVATION:
COORDINATES: N: 38° 20.012 W: 76° 15.639	DEPTH WATER ENC.	AT END DRILL	AT 24 HRS	CAVED DEPTH
DRILLER: J. Sies	WEIGHT OF HAMMER: 140 lbs	HEIGHT OF FALL: 30 inches	TYPE OF CORE:	DEPTH OF BORING: 6.5
TYPE OF DRILL RIG & METHOD: HSA	DEPTH TO ROCK	LOGGED BY: A. Ebrahimian		PAGE NO.: 1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA: SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0			Water						
2									
4									
6			Brownish gray, moist, Silty fine SAND (SM)	S-1	18"	2- 2- 3	DS	12"	
8			Bottom of Boring @ 6.5 feet						
10									
12									
14									
16									
18									
20									
22									
24									
26									
28									
30									
32									
34									

E2CR, Inc.

BORING LOG

PROJECT: Honga River Sampling				PROJECT NO.: 03533-03	BORING NO.: DH - 6
SITE: Eastern Shore, Maryland	BEGUN: 05/30/03	COMPLETED: 05/30/03	HOLE SIZE:		GROUND ELEVATION:
COORDINATES: N: 38° 19.940 W: 76° 15.596	DEPTH WATER ENC.	AT END DRILL	AT 24 HRS		CAVED DEPTH
DRILLER: J. Sies	WEIGHT OF HAMMER: 140 lbs	HEIGHT OF FALL: 30 inches	TYPE OF CORE		DEPTH OF BORING: 15
TYPE OF DRILL RIG & METHOD: HSA	DEPTH TO ROCK	LOGGED BY: A. Ebrahimian			PAGE NO.: 1 OF 1

DEPTH	STRATA ELE./ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA: SAMPLE NO.	SAMPLE LENGTH	N-VALUE/ RQD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY	REMARKS:
0			Water						
2									
4									
6			Brownish gray, moist, Silty fine SAND (SM)	S-1	18"	2- 2- 2	DS	7"	
8			Orange brown, gray, moist, Silty fine SAND, trace Clay and mica (SM)	S-2	18"	9- 8- 6	DS	18"	
10									
12				S-3	18"	6- 6- 7	DS	18"	
14			Gray, orange brown, moist, Clayey fine to coarse SAND to Sandy CLAY (SC)	S-4	18"	WOH/6"- 2- 2	DS	18"	
16			Bottom of Boring @ 15.0 feet						
18									
20									
22									
24									
26									
28									
30									
32									
34									

ATTACHMENT 7

State of Maryland, Water Quality Certification No. 03-WQ-001

MDE
MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard • Baltimore MD 21230
410-537-3000 • 1-800-633-6101

Robert L. Ehrlich, Jr.
Governor

Lynn Y. Buhl
Secretary Designate

Michael S. Steele
Lt. Governor

WATER QUALITY CERTIFICATION

NABOP - N-03-01

CERTIFICATION 03-WQ-001

PUBLIC NOTICE DATE December 24, 2002

TO: U.S. Army Corps of Engineers
Operations Division
P.O. Box 1715
Baltimore, MD 21203-1715

RE: Maintenance dredging – Honga River and Tar Bay, including Back Creek and Tyler Cove, Dorchester County. Approximately 189,000 cubic yards to be removed and placed behind offshore breakwaters on the northern and western sides of Barren Island.

This water quality certification is issued under authority of Section 401 of the Federal Water Pollution Control Act and its Amendments and the Environment Article, Sections 9-313 - 9-323, inclusive, Annotated Code of Maryland. A copy of this required certification has been sent to the Corps of Engineers. This certification does not relieve the applicant of responsibility for obtaining any other approvals, licenses or permits in accordance with federal, State, or local requirements and does not authorize commencement of the proposed project. The Maryland Department of the Environment has determined from a review of the plans that the construction of this facility and its subsequent operation as noted herein will not violate Maryland's water quality standards, provided that the following conditions are satisfied.

The applicant shall comply with the conditions marked (X) below:

(X) (1) The proposed project shall be constructed in a manner which will not violate Maryland's Water Quality Standards as set forth in COMAR 26.08.02. The applicant is to notify this department ten (10) days prior to commencing work. Verbal notification is to be followed by written notice within ten (10) days.

(X) (2) The proposed project shall be constructed in accordance with the plan and its revisions as approved by the:

(X) (a) Corps of Engineers
( ) (b) Water Management Administration

(X) (3) All fill and construction materials not used in the project shall be removed and disposed of in a manner which will prevent their entry into waters of this State.

(X) (4) The applicant shall notify this Department upon transferring this ownership or responsibility for compliance with these conditions to another person. The new owner/operator shall request transfer of this water quality certification to his/her name.

"Together We Can Clean Up"

(X) (5) The certification holder shall allow the Maryland Department of the Environment or its representative to inspect the project area at reasonable times and to inspect records regarding this project.

( ) (6) Construction of any bulkhead shall be completed prior to filling behind the bulkhead. The bulkhead shall be constructed in such a manner so as to prevent the loss of fill material to waters of this State. Only clean fill, which is free of organic, metallic, toxic or deleterious materials shall be used.

( ) (7) The disturbance of the bottom of the water and sediment transport into the adjacent State waters shall be minimized. The applicant shall obtain and certify compliance with a grading and sediment control plan which has been approved by the:

( ) (a) _____ Soil Conservation District or
( ) (b) Erosion and Control Representative, Division of Environmental Services, Bureau of Highways, Department of Public Works of the City of Baltimore or
( ) (c) The Department of the Environment, Water Management Administration or
( ) (d) Montgomery County Department of Environmental Protection.

The approved plan shall be available at the project site during all phases of construction.

( ) (8) The spoil disposal area(s), including dikes where applicable, shall be constructed to limit the suspended solids content in the discharge to the waters of this State to four hundred (400) parts per million or less.

(X) (9) Dredging shall be done only in the period May 16 through November 14.

( ) (10) Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway. The natural vegetation shall be maintained and restored when disturbed or eroded. Stormwater drainage facilities shall be designed, implemented, operated and maintained in accordance with the requirements of the applicable approving authority.

( ) (11) _____ shall provide to the Water Management Administration a stormwater management plan including cross-sections which incorporates effective pollutant removal strategies in uplands to treat a minimum of the first one-half inch of runoff from impervious surfaces prior to release of stormwater into State waters or wetlands. There shall be no discharge of untreated stormwater to State waters or wetlands. The plan shall be provided by _____ and shall be implemented by_____.

( ) (12) _____ shall provide to the Water Management Administration a mitigation plan for the construction of - _____ acre(s) of _____ wetland for review and approval by _____. The plan shall be implemented by _____. The plan shall show:

-the source of hydrology for the constructed wetland
-the source and amount of soil to be used in constructing the wetland
-the species, size and density of vegetation to be planted in the constructed wetland and a planting schedule.
-a monitoring/maintenance plan.

( ) (13) _____ shall monitor the mitigation site for a period of five years and shall determine whether the wetland construction has been successful. A successful mitigation project shall result in: _____ plants/acre and 85%

survivability of plants in forested and scrub/shrub wetlands and plants covering 85% of the area for emergent wetlands. If these standards are not met, _____ shall determine the reason(s) for failure, the problem(s) shall be corrected, and the area(s) shall be replanted and monitored.

( ) (14) The mitigation site shall be constructed in accordance with the plan, dated_____.

( ) (15) _____ shall provide a _____ plan for review and approval by _____. This plan shall be implemented by _____.

( ) (16) At least one culvert in every stream crossing shall be depressed at least one foot below existing stream bottom under the low flow condition. A low flow channel shall be provided through any riprap structures. The culvert shall be constructed and any riprap placed so as not to obstruct the movement of aquatic species.

( ) (17) Stormwater discharges from ponds, stormwater management outfalls, and stormwater facilities shall have a velocity no greater than four feet per second for the two year storm in order to prevent erosion in the receiving waterway or wetland.

( ) (18) Future stormwater discharges to certified pond(s) are prohibited unless the first one half inch of stormwater runoff from impervious surfaces is managed in uplands for effective pollutant removal.

( ) (19) Authorized stormwater detention ponds shall have a maximum detention time of _____ hours.

( ) (20) _____ shall restore and revegetate all temporarily disturbed waters and wetlands to original contours upon completion of construction.

Failure to comply with these conditions shall constitute reason for suspension or revocation of the Water Quality Certification and legal proceedings may be instituted against the applicant in accordance with the Annotated Code of Maryland. In granting this certification, the Department reserves the right to inspect the operations and records regarding this project at anytime.

CERTIFICATION APPROVED

Elder A. Ghigiarelli, Jr.
Water Management Administration

March 7, 2006
Expiration Date